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PRIEST RIVER EXTENSION OF THE VICKSBURG INFILTRATION PROJECT

THE DEVELOPMENT OF METHODS FOR PREDICTING SOIL MOISTURE CONTENT

By

Austin E. Helmers

REPORT ON THE PRIEST RIVER, IDAHO STUDY

Conducted for
WATERWAYS EXPERIMENT STATION
CORPS OF ENGINEERS, U.S. ARMY
Vicksburg, Mississippi

Northern Rocky Mountain Forest and Range Experiment Station

Inland Empire Research Center

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Month	Site: Burn	Timber	Benton	Meadow	Lake
	Table numbers				
			1952		
July	9	16	23	27	35
August	10	17	24	28	36
September	11	18	25	29	37
October	12	19	26	30	38
			1953		
April	-	-	-	31	-
May	13	20	-	32	-
June	14	21	-	33	-
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August	-	-	-	-	40

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Tier No.	Site: Burn	Timber	Benton	Meadow	Lake
	Figure numbers				
			1952		
1	17	21	25	27	31 1/
2	18	22	26	28	
			1953		
1	19	23		29	32 1/
2	20	24		30	

1/ Mean of tiers 1 and 2.

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THE DEVELOPMENT OF METHODS FOR PREDICTING SOIL MOISTURE CONTENT

Report on the Priest River, Idaho Study

Austin E. Helmers[1/]

INTRODUCTION

The Forest Service, U. S. Department of Agriculture, at the request of the Waterways Experiment Station, U. S. Army Corps of Engineers, made preliminary investigations for developing soil moisture prediction methods in 1951 at Vicksburg, Mississippi. Expansion to other areas began in June 1952 with the establishment of a soil moisture prediction study at the Priest River Experimental Forest in northern Idaho. The 1952 field season at Priest River extended to November. Field work was resumed the next year in April and terminated in August 1953. The results of the Priest River study are reported herein.

1/ Forester, Northern Rocky Mountain Forest and Range Experiment Station, Inland Empire Research Center, Spokane, Washington. Howard W. Lull of the Vicksburg Infiltration Project, Vicksburg, Mississippi was in charge of the technical aspects of the study. C. A. Wellner, Leader, Inland Empire Research Center was in administrative charge of the project. James C. Holland, Soil Scientist, assisted in all phases of the study. Raymond J. Boyd, Forester, participated in the 1953 field work and the compilation and analysis of data. Field assistants employed at various times on the project were Henry F. Mehlert, Joe T. Helle, Arthur A. Henderson, J. Russell Dahl, and John H. Dieterich.

Factors affecting soil moisture were discussed in two previous reports (3, 12)[2/] on the Vicksburg studies. The field and analytical procedures for the Priest River study were prescribed by the above two Vicksburg reports and later modifications.

DESCRIPTION OF EXPERIMENTAL AREAS

Location

The study sites are within or adjacent to the Priest River Experimental Forest, Bonner County, Idaho. Site designations and locations are shown in table 1.

2/ Numbers in parenthesis refer to Literature Cited, page 135.

Table 1. Description of experimental areas

Descriptive designation 1/	Location	Waterways Experiment Station classification	
		Site No.	Trafficability soil-climate classification
Burn	Upper West Branch Creek (Squaw Valley) NE¼ Sec. 23, T59N, R5W, B. M.	65	C2b
Timber	Upper West Branch Creek (Squaw Valley) NE¼ Sec. 23, T59N, R5W, B. M.	66	C2b
Benton	Benton Creek, Priest River Experimental Forest SE¼ NW¼, Sec. 26, T58N, R4W, B.M.	67	C2b
Meadow	Priest River Experimental Forest Headquarters SE¼ NE¼, Sec. 27, T58N, R4W, B.M.	68	C2b
Lake	Blue Lake, NW¼ NE¼, Sec. 25, T57N, R4W, B.M.	64	C2

1/ These designations will be used for the remainder of this report.

Geology[3/]

The general vicinity of the study areas lies within the Selkirk Mountain range. Low ridges and discontinuous areas along the base of the main Selkirk range are mostly pre-Cambrian metamorphosed sedimentary rocks of the Belt series. These rocks are mainly quartzitic and argillaceous and include some calcareous rocks. By far the greatest part of the Selkirk range consists of igneous intrusive rocks of the Idaho batholith. These rocks are largely quartz monzonite but include grandiorite, quartz diorite, granite, etc.

The Selkirk Mountains were almost entirely overridden by the Spokane ice sheet and subsequently glaciated by both the alpine and Wisconsin ice lobes. Glacio-fluvial deposits and some loessial deposition form the parent materials at all of the experimental sites except at the Lake site where the parent material is organic.

Soils[4/]

The study sites are all on valley-bottom soils which may be divided into two broad natural groups:

(1) light-colored well-drained soils (Burn and Timber sites)

(2) dark-colored poorly-drained soils (Lake, Benton, and Meadow sites)

3/ Adapted from (1, 6, 9, 11)

4/ Soil descriptions were assembled from (9) and communications resulting from an examination of the study sites on September 5, 1952 by R. G. Roberts and W. J. Leighty, Division Soil Survey, BPISAE, ARA, U. S. Dept. of Agriculture, accompanied by Dr. M. G. Cline, Cornell University.

Burn and Timber sites

Both the Burn and Timber sites are located on Mission silt loam, a planosol-brown podzolic intergrade exhibiting some resemblance to the intrazonal Cabinet series.

The soils developed under mixed conifer forests on old glacial lake materials. Parent materials, an undetermined wide variety of rocks, consist of fine textured material deposited while the area was of ponded drainage. The surface soil has been somewhat modified by loessal materials. Under older forest stands the soil has a characteristic two to three-inch thick leaf mat underlain by a thin gray strongly acid A_2 grading into a less acid 10 to 16-inch layer of loesslike shotty yellowish-brown fluffy silt loam. This changes abruptly to a light-yellowish gray siliceous manganese-stained heavy silt loam or silty clay loam grading into a more compact cubical light grayish brown nearly stone-free material to a depth of about 30 inches. This layer is somewhat stained with iron. Root channels and other cavities are coated with a dark-colored colloidal or a grey podzolized siliceous material. The lower portions of the profile, to depths of 70 inches or more, are gray and rust colored materials of silty clay loam, silt loam, and clay texture including occasional strata of sandy material. The soil is underlain by gravel at depths in excess of about 10 feet.

A little over 97,000 acres of soils of the Mission series have been mapped in Bonner County, Idaho and Stevens and Spokane Counties, Washington (4, 5, 9). About 3,000 acres of the Cabinet series occur in Bonner County (9).

Benton Site

The Benton site is an azonal alluvial soil consisting of recently deposited granitic and schistose materials on a gently sloping first bottom along Benton Creek. The surface soil is moderately well drained but the ground water table may be less than four feet during all but the driest summer and early fall periods. A typical profile shows a one-half to one inch A_o horizon of slightly matted, partly decomposed leaf litter underlain by a 1/8 to 1/4-inch indistinct light grey loam A_2. The A_3 (or possibly B_1) is a brown (10 YR 5/3) weakly fine platy, moderately coarse granular loam extending to a depth of 6 inches. The B_2, from 6 to 20 inches, is a yellowish brown (10 YR 5/6) strongly very coarse granular to fine subangular blocky fine-textured silt loam with a heavy coating of dark brown material on the granules, in the cracks, and around pores. Large pores are numerous. The B_2 is lightly more clayey than the A_3. A dark brown or dark grayish brown massive loam C horizon extends to 40 inches underlain by a 6-inch layer of slightly micaceous dark grayish-brown friable clay loam. Below 46 inches depth, the soil material is a slightly micaceous grayish-brown gravelly sandy loam.

The soil is unnamed but resembles Chamokane loam. About 23,000 acres of soils of the Chamokane series have been mapped in Bonner, Kootenai, and Benewah Counties, Idaho, and Stevens County, Washington (4, 7, 8, 9).

Meadow site

The Peone silt loam of the Meadow site occupies a low recent stream terrace. The soil is a type of Gley with parent material representing an undetermined wide range of rocks and siliceous material of diatomaceous origin. A typical profile at the site shows a surface inch of dark grayish-brown silt loam underlain to a depth of 8 inches by a light-gray massive silt loam with many splotches and channels of dark gray. The layer contains a few small reddish-brown concretions. The next 6-inch layer is similar to the above but with many small holes and more frequent reddish brown and dark concretions. The 14 to 19-inch layer, the horizon of greatest iron concentration, is a gray friable massive loam strongly mottled with reddish brown and containing many iron concretions and splotches. This horizon also contains a thin sandy loam layer. From 19 to 30 inches, the soil is an olive-gray strongly mottled friable loam with many cavities, underlain to a depth of 45 inches with a moderately micaceous strongly mottled very dark gray to gray and brown clay loam. From 45 to 55 inches the material is an olive-gray fine sandy clay loam strongly mottled with yellowish brown. A clay loam extends below 55 inches.

The site has been used intermittently as a livestock pasture up to about 1950 and possibly cultivated sometime before that. Occasional livestock use at times of high moisture levels in the soil has resulted in some disturbance of the surface layers.

Lake site

The Lake site is Mukilteo peat, a sedge peat developing in an upland glacial lake depression (figure 1). The surface inch is a light brownish gray loam and root mat. A very dark brown (wet) (10YR 4/3) moderately well to well decomposed sedge peat extends to a depth of about 20 inches. This layer contains some woody material and also a half inch lense of pale-brown volcanic ash or diatomaceous earth at a depth of about 5 inches. Below 20 inches and to a depth in excess of 10 feet the peat is yellowish-brown (wet) slightly decomposed material, largely sedge. Reaction varies from pH 4.8 to 5.0 in the surface layers to 5.8 to 6.0 in the 20-60 inch layer. Over 28,000 acres of muck and peat are mapped in Bonner, Kootenai, and Benewah Counties, Idaho, and Stevens and Spokane Counties, Washington (4, 5, 7, 8, 9). Muck and peat are often not differentiated in the soil surveys but peat predominates.

Soil texture, plasticity, and bulk density

The Soils Laboratory of the Waterways Experiment Station made the mechanical analyses of soil texture and determined the Atterberg plasticity constants for the surface foot of soil from each of the five sites. Bulk density was determined in the field from excavated soil blocks one foot square and 3 inches deep. These physical characteristics are summarized in table 2.

Soil moisture tension

The analysis of soil moisture-tension relationships will be made at Vicksburg. The results for completing table 3 were not available at the time of this writing.

Figure 1. View southeast over Blue Lake. Level area west and southwest of the lake and the valley bottom strip extending east of the lake is Mukilteo peat developed in an upland glacial lake depression. Circle indicates location of study site.

Table 2. Soil texture, plasticity, and bulk density

Site and soil series	Layer or horizon	Depth	Mechanical analysis 1/ U.S.D.A. Gravel	Sand	Silt	Clay	ASCE Gravel	Sand	Fines	Engineering classification	Plasticity constants 2/ Liquid limit	Plastic limit	Plasticity index	Bulk density
		Inches	Percent								Percent			Gms/cc.
Burn Mission silt loam	A_2-B_1	0-3	0	18	75	7	0	11	89		50	47	3	.55
	B_2	3-6	0	18	75	7	0	11	89		50	47	3	.62
	B_2	6-9	0	18	75	7	0	11	89		50	47	3	.62
	B_2-C_1	9-12	0	8	75	17	0	2	98		32	25	7	.69
Timber Mission silt loam	A_0-A_2	0-3	0	22	73	5	0	13	87		53	48	5	.66
	B_2	3-6	0	22	73	5	0	13	87		53	48	5	.66
	B_2	6-9	0	4	85	11	0	0	100		22	20	2	.68
	B_{22}-C_1	9-12	0	4	85	11	0	0	100		22	20	2	.71
Benton (Chamokane) loam 3/	A_0-A_3	0-3	14	24	48	14	13	19	68		49	38	11	.81
	A_3	3-6	14	24	48	14	13	19	68		49	38	11	.96
	B_2	6-9	4	23	53	20	2	16	82		51	31	20	1.01
	B_2	9-12	4	23	53	20	2	16	82		51	31	20	1.10
Meadow Peone silt loam	A_1	0-3	0	15	64	21	0	8	92		43	36	7	.89
	A_1	3-6	0	15	64	21	0	8	92		43	36	7	1.09
	A_1-A_2	6-9	0	12	75	23	0	7	93		39	31	8	1.18
	A_2	9-12	0	12	75	23	0	7	93		39	31	8	1.06
Lake Mukilteo peat	A	0-3	Organic soil								306	217	91	.235
	A	3-6	"	"							308	217	91	.252
	B	6-9	"	"							308	217	91	.165
	B	9-12	"	"							590	323	267	.148

1/ Particle size classification:

	USDA	ASCE
Gravel	> 2.0 mm	> 4.76 mm
Sand	2.0 - 0.05 mm	4.76 - 0.074 mm
Silt	0.05 - 0.002 mm	} Fines < 0.074 mm
Clay	< 0.002 mm	

2/ Atterberg Limits

3/ Tentative identification of series

Table 3. Soil moisture tension

Site	Soil Series	Layer or horizon	Depth	Soil moisture percentage at moisture tensions (atmospheres) of: .005		.03		.06		1/3		2/3		15	
				Weight	Volume 1/	Weight	Volume	Weight	Volume	Weight	Volume	Weight	Volume	Weight	Volume
			Inches												
Burn	Mission silt loam	A_2-B_1	0-3												
		B_2	3-6												
		B_2	6-9												
		B_2-C_1	9-12												
Timber	Mission silt loam	A_0-A_2	0-3												
		B_2	3-6												
		B_2	6-9												
		B_{22}-C_1	9-12												
Benton	Chamo-kane loam	A_0-A_3	0-3												
		A_3	3-6												
		B_2	6-9												
		B_2	9-12												
Meadow	Peone silt loam	A_1	0-3												
		A_1	3-6												
		A_1-A_2	6-9												
		A_2	9-12												
Lake	Mukilteo peat	A	0-3												
		A	3-6												
		B	6-9												
		B	9-12												

1/ Mean bulk density values were used to convert soil moisture percentages to a volume basis.

Vegetation

Vegetation, through the transpiration process, is probably the factor having the most pronounced direct effect on soil moisture depletion. A number of meteorological factors undoubtedly exert an influence, but the greater factor is their modification by vegetation. Vegetation develops in response to environment and as it develops, it in turn reacts on the environmental factors. For purposes of this report, the effects of a natural vegetation are considered as relatively stable from year to year because the over-all changes in factors influencing it are rather slight over long periods of time.

Timber site

The Timber site supports an old-growth (over 200 years old) stand composed largely of western hemlock but including some grand fir and western white pine (figure 2 and table 3). Occasional western larch, Douglas-fir and Engelmann spruce are also present. The understory is mostly western hemlock but includes grand fir and western redcedar.

Low vegetation at the Timber site is sparse (square-foot density less than 1/10) and predominately Chimaphila umbellata (L.) Bart. and Linnaea borealis L. Vaccinium membranaceum Dougl., Pachistima myrsinites (Pursh) Raf., Clintonia uniflora (Schult.) Kunth, Cornus canadensis L., Viola species, and a few grasses and grass-like plants are also present.

Figure 2. Timber site on May 8, 1953 about one week after the disappearance of snow. Forest Service type rain gages are shown at the corners of a soil moisture sampling plot. The plot includes a tier of fiberglas soil moisture units with lead terminating at the right edge of the plot. Timber stand in the background is largely western hemlock over 200 years old.

Table 4. The timber stand and its composition on the Burn, Timber, and Benton sites, trees over 0.5 inches d.b.h.

Species	Burn site				Timber site				Benton site			
	Stand per acre		Composition		Stand per acre		Composition		Stand per acre		Composition	
	Trees	Basal area	Trees	Basal area	Trees	Basal area	Trees	Basal area	Trees	Basal area	Trees	Basal area
	No.	Sq.ft.	Percent		No.	Sq.ft.	Percent		No.	Sq.ft.	Percent	
Western white pine	54	<1	5	2	58	58	9	30	57	19	9	8
Western larch	294	8	27	39	5	13	1	7	98	72	16	31
Douglas-fir	-	-	-	-	9	9	1	5	32	22	5	9
Grand fir	-	-	-	-	63	2	10	1	24	31	4	13
Western hemlock	6	<1	<1	<1	419	110	67	55	49	16	8	6
Western redcedar	-	-	-	-	72	1	11	1	342	65	57	27
Engelmann spruce	-	-	-	-	5	<1	1	<1	-	-	-	-
Lodgepole pine	16	1	2	7	-	-	-	-	-	-	-	-
Ponderosa pine	326	8	30	40	-	-	-	-	8	14	1	6
Cottonwood	364	2	34	11	-	-	-	-	-	-	-	-
Birch	11	1	1	1	-	-	-	-	-	-	-	-
TOTAL	1071	20	100	100	631	193	100	100	610	239	100	100
Mean D.B.H. (inches of dominant and codominant stand		3.2				18.1				13.0		

Burn site

The vegetation at the Burn site was almost identical to that now on the Timber site until the site was burned over by wildfire in 1926. The standing material after this fire was felled and prescribed broadcast burned in 1935. The forest cover now consists of planted ponderosa pine and natural regeneration of northern black cottonwood, western larch, and western white pine with a small amount of lodgepole pine, western hemlock, and a birch species also present (figure 3 and table 4).

Low vegetation at the Burn site is dominated by Spiraea lucida Dougl., low ferns, Vaccinium membranaceum Dougl., and Pachistima myrsinites (Pursh) Raf. Other shrubs such as Rosa sp., Berberis repens Lindl., and forbs such as Achillea lanulosa Nutt., Fragaria sp., Anaphalis margaritacea (L.) B. & H., Cornus canadensis L., Viola sp., and Epilobium angustifolium L. are also common. Trifolium sp. and several species of grasses and grass-like plants also occur. Mosses and liverworts commonly form discontinuous mats over the soil surface.

Benton site

The Benton site (figure 4) supports a 90-year-old stand dominated by western white pine and western larch which are associated with Douglas-fir and grand fir and an understory of mostly western redcedar and western hemlock (table 4).

The low vegetation is very sparse, a square-foot density of less than 1/10, and consists mostly of Coptis occidentalis (Nutt.) T. & G., Arnica cordifolia Hook., Linnaea borealis L., Asarum caudatum Lindl., and Trillium ovatum Pursh.

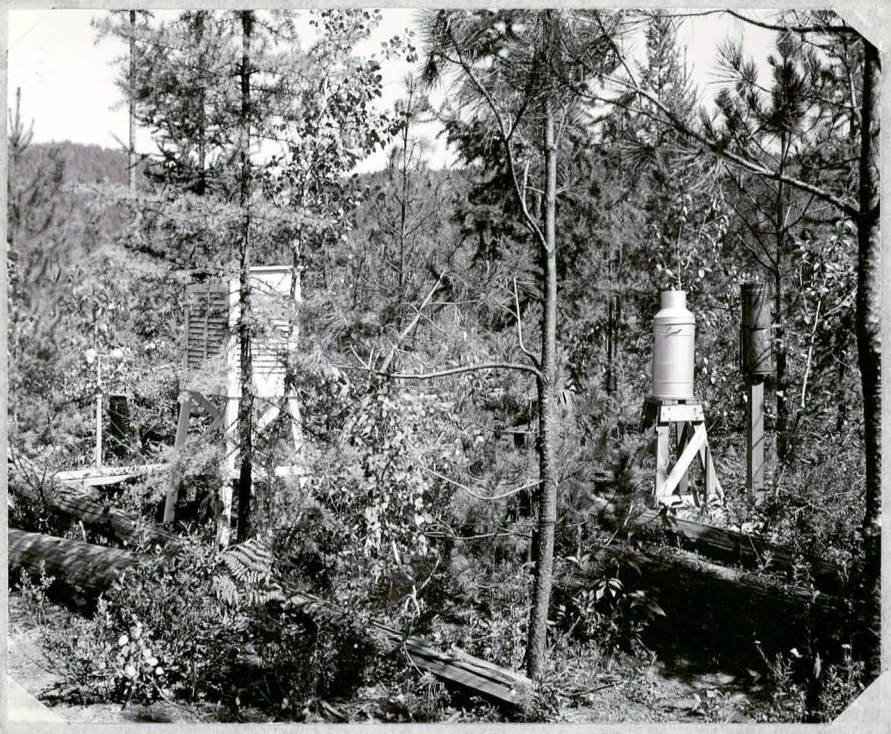

Figure 3. Burn site showing planted ponderosa pine and natural regeneration of northern black cottonwood and western larch. Also shown is meteorological equipment, left to right, anemometer, instrument shelter housing a hygrothermograph, recording precipitation gage, and a U.S.W.B. standard precipitation gage.

Figure 4. Benton site on September 14, 1952, showing 90-year-old stand and sparse low vegetation. Dotted lines outline two 6-foot-square soil moisture sampling plots.

Meadow site

The Meadow site (figure 5) supports a rather dense growth of grasses and forbs. Grasslike plants and grasses such as Agrostis sp., Phleum pratense L., and Poa pratensis L. predominate. Forbs are common also and include Taraxacum vulgare (Lam.) Schrank., Trifolium sp., Viola sp., a daisy (probably a species of Erigeron), Achillea lanulosa Nutt., and Rumex sp. A number of other common forbs occur sparsely on the site.

The Meadow site vegetation has been disturbed to some degree until about 1950 by light to moderate livestock use. The area may have supported a tall shrub cover, probably dominated by Alnus sp. and Salix sp. at one time but has supported a cover essentially the same as the present vegetation for at least 40 years.

Lake site

Vegetation at the Lake site is almost entirely sedge (figure 6) occurring as a very uniform stand with a square-foot density of 4/10ths. There is also present a sparse stand of Spiraea densiflora Nutt. and Viola sp. and a few other low forbs.

The early natural vegetation probably consisted of a dense growth of high shrubs similar to the brush zone (figure 1) which now borders the lake. Areas now under cultivation or used for pasture probably represent that portion of the peat land that is operable with farm machinery during the drier parts of the growing season. The cleared area on which the study site is located had not been cultivated for several years. Cultivated areas shown in figure 6 were plowed in the fall of 1952 after the study plot was established.

A

B

Figure 5. Meadow site on: A. April 29, 1953 showing dead plant material from the 1952 season and the 1953 regrowth just beginning. Note the irregular surface that might be due, in part, to past disturbances such as use by livestock and possibly cultivation; B. Same view on July 2, 1953.

A

B

Figure 6. A. Lake site on May 11, 1953 showing dead plant material from the 1952 stand of sedge and the 1953 regrowth just beginning. Note ground water level above the surface of depressions in the background. B. Same stand as A above on July 17, 1953.

Seasonal development

The annual growth of vegetation begins almost immediately after the disappearance of the snow pack. Snow survey records indicate that open areas in the vicinity of the Experimental Forest headquarters are generally bare of snow by about the middle of April and occasionally as early as late March. Valley bottom snow depths decrease markedly towards the Lake site area which is south of the Experimental Forest and increase sharply toward the Burn and Timber study areas north of the Forest. Actual measurements are not available, but observations indicate that the date of snow disappearance in the vicinity of the Lake site may be two weeks or more earlier than at the Burn and Timber sites. The Experimental Forest is north of the Lake site and south of the Burn and Timber sites and occupies approximately a middle position with respect to snow depths and date of snow disappearance.

Vegetation development is well under way by late June or early July when the rain season usually ends. Maximum development is attained in late July or early August. By this time differences in the stage of vegetation development at the various site areas are not pronounced. The curing of vegetation is definitely in progress during September and most of the vegetation is cured by the middle of October. A small amount of regrowth sometimes occurs when the early fall period is both warm and wet.

In 1953 the low vegetation at the study sites was judged to have reached its maximum development by July 20. Clippings made on this date showed that live vegetation at the Meadow site had an oven dry weight of 37.9 grams per square foot and 17.7 grams at the Lake site (table 5). Table 5 shows that growth was well established by the middle of June. Curing was apparently in progress by August 12.

Table 5. Oven dry weight of live vegetation at the Meadow and Lake sites in 1953

Date	Oven dry weight of live vegetation	
	Meadow site	Lake site
	Grams per square foot	
June 10	29.9	-
June 16	-	14.7
July 2	33.9	14.8
July 20	37.9	17.7
August 12	35.7	16.1

HYDROMETEOROLOGICAL FACTORS

The study sites are within an area of humid climate influenced by prevailing westerly winds and characterized by considerable amounts of annual precipitation but subject to dry summers. The climate is also characterized by warm winds of low humidity and is affected locally by night temperature inversions. Climatic "normals" at the Priest River Experimental Forest weather station, where a 42-year record is available, are shown in table 6. A 17-year record of snow measurements is also summarized.

Annual precipitation averages 29.19 inches. January is normally the wettest month, averaging 3.76 inches of precipitation. The driest month, July, averages 0.84 inch of rainfall. The driest month of record is August 1931 with only a trace of precipitation. October 1947, the wettest month of record, had 8.31 inches of precipitation.

The mean annual temperature is 43.7° F. with a high monthly mean of 62.6° F. in August and a low of 23.6° F. in January. The highest daily maximum temperature was 102° F. in July 1924 and the lowest daily minimum was -35° F. in February 1933.

A mean maximum snow depth has not been determined for 30- or 40-year normals. The 20-year mean was 37 inches. Snow depths may reach almost four feet. It is estimated that about 35 percent of the annual precipitation occurs as snow.

Table 6. Climatic means at the Priest River Experimental Forest

Month	Precipitation			Air temperature			Snow 3/	
	Mean 1/	Highest	Lowest	Mean 1/	Mean 2/ maximum	Mean 2/ minimum	Depth	Water equivalent
	Inches			Degrees F.			Inches	
January	3.76	6.70	1.09	23.6	30.5	16.9	12	2.7
February	2.79	6.53	.57	27.3	36.4	17.5	19	4.8
March	2.55	5.99	.25	34.8	46.3	23.9	19	6.0
April	1.91	4.51	.30	43.9	58.0	29.5	5	2.1
May	2.10	6.24	.72	51.4	66.9	36.0	0	0
June	1.98	4.92	.14	58.0	74.3	42.0		
July	.84	3.43	.03	64.4	83.6	45.0		
August	.96	4.24	Trace	62.6	82.3	42.8		
September	1.75	7.50	.03	54.1	70.4	37.4		
October	2.64	8.31	.47	44.4	56.4	31.6		
November	3.60	7.69	.11	33.2	39.9	26.4		
December	4.31	11.22	.91	26.6	32.4	20.6		
Annual	29.19			43.7				

Mean maximum snow depth: approx. 37 inches
Mean annual snowfall: approx. 83 inches
Mean length of season without temperatures of 32° F or lower: 62 days

1/ U.S.W.B. Monthly Climatological Summaries, Idaho Section
2/ 30-year means
3/ Cooperative snow surveys, measured monthly January 1 to May 1, inclusive, 17-year means

Basic meteorological factors, such as solar radiation, precipitation, wind, air temperature, and relative humidity, affect soil climate and moisture directly through such processes as heat exchange, evaporation, infiltrating water, changes in soil air, and exchange of soil and atmospheric air. These factors also indirectly affect the soil through their effects on vegetation. From the standpoint of predicting soil moisture depletion at a particular site, vegetation is the principal means through which meteorological factors exert an influence on soil moisture losses. In comparison, the direct effects of meteorological factors independent of vegetation are small. On bare areas, of course, the physical factors may have the major effect. Meteorological factors are variable from day to day but their net change is usually small from year to year. Thus the differences in net effects of meteorological factors on vegetation between one year and the next usually are not pronounced.

Rainfall adds directly to the water in the soil and is the most important meteorological factor in predicting soil moisture accretion. Several other meteorological factors may result in soil moisture gains, but their effectiveness as compared with rainfall is minor. These factors can be masked by high ground water levels.

Instrumentation

Instrumentation of the study sites is summarized in table 7. The type of meteorological installation used is illustrated by the instrumentation shown at the Burn site in figure 3. Figures 7 to 11, inclusive, show the location of the installations at each site. Also shown (figures 7, 8, and 9) are the location, species, and diameter at breast height of trees in the vicinity of the soil moisture sampling plots. Remolding plots shown on the maps of the sites are the locations where determinations were made of the shearing resistance of the soil and of the ratio between remolded and natural strength of the soil. The results of these tests are not included in this report.

Precipitation gages at the Timber and Benton sites were placed under a canopy of approximately the same density as over the soil moisture instruments and soil sampling plots. Differences in precipitation catch between the gages and the soil sampling plots observed at the Timber site in 1952 were adjusted on the basis of the 1953 ratio of catch by Forest Service gages placed at each corner of the soil sampling plots to the catch by the U.S. Weather Bureau standard gage. The Benton site was discontinued in the fall of 1952 and a possible precipitation adjustment factor was not determined. Artificial rainfall applications using a Rocky Mountain infiltrometer (2) were used to augment natural rainfall to accumulate accretion data.

Hygrothermographs were exposed in ventilated shelters about 3½ feet above the ground surface. Anemometers were about 3 feet above the ground surface. Air temperature, relative humidity, and wind at the Headquarters meteorological station were assumed representative of the Meadow site nearby.

Table 7. Summary of instrumentation

Site	Precipitation gage: Recording	Precipitation gage: Non-recording: U.S.W.B. Std.	Precipitation gage: Non-recording: Forest Service	Hygrothermograph	Anemometer	Ground water wells: Well with recorder	Ground water wells: 4" wells with 1, 2, 3, 4-ft. depths	Staff gage for lake level	Fiberglas soil moisture and temperature instruments: No. tiers
Burn	x	x		x	x				2
Timber	x	x	x	x	x				2
Benton	x	x		x	x				2
Meadow		x					x		2
Lake	x	x		x	x	x		x	2
Headquarters[1/]	x	x		x	x				

1/ Cooperative U.S.W.B. station near the Meadow site.

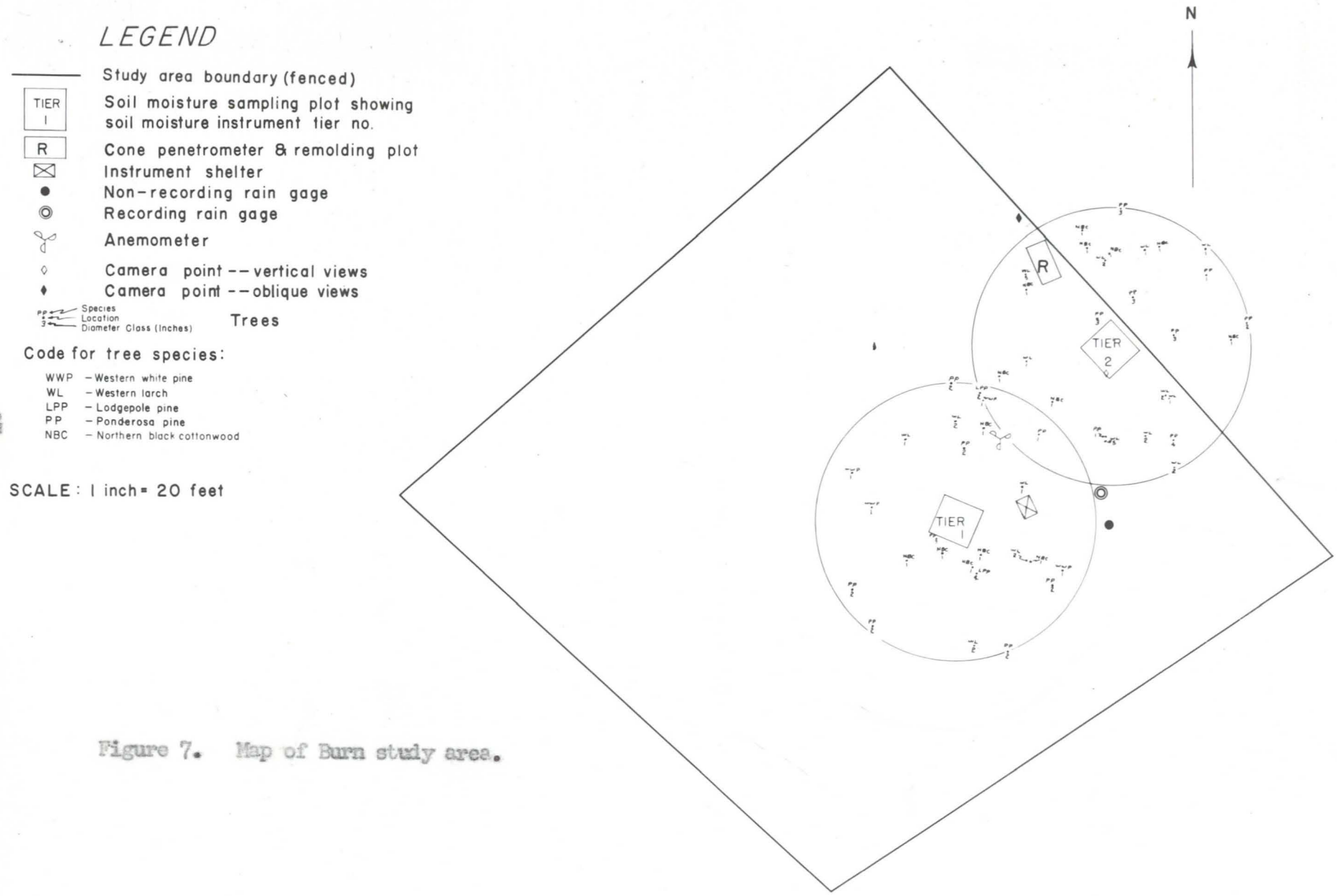

Figure 7. Map of Burn study area.

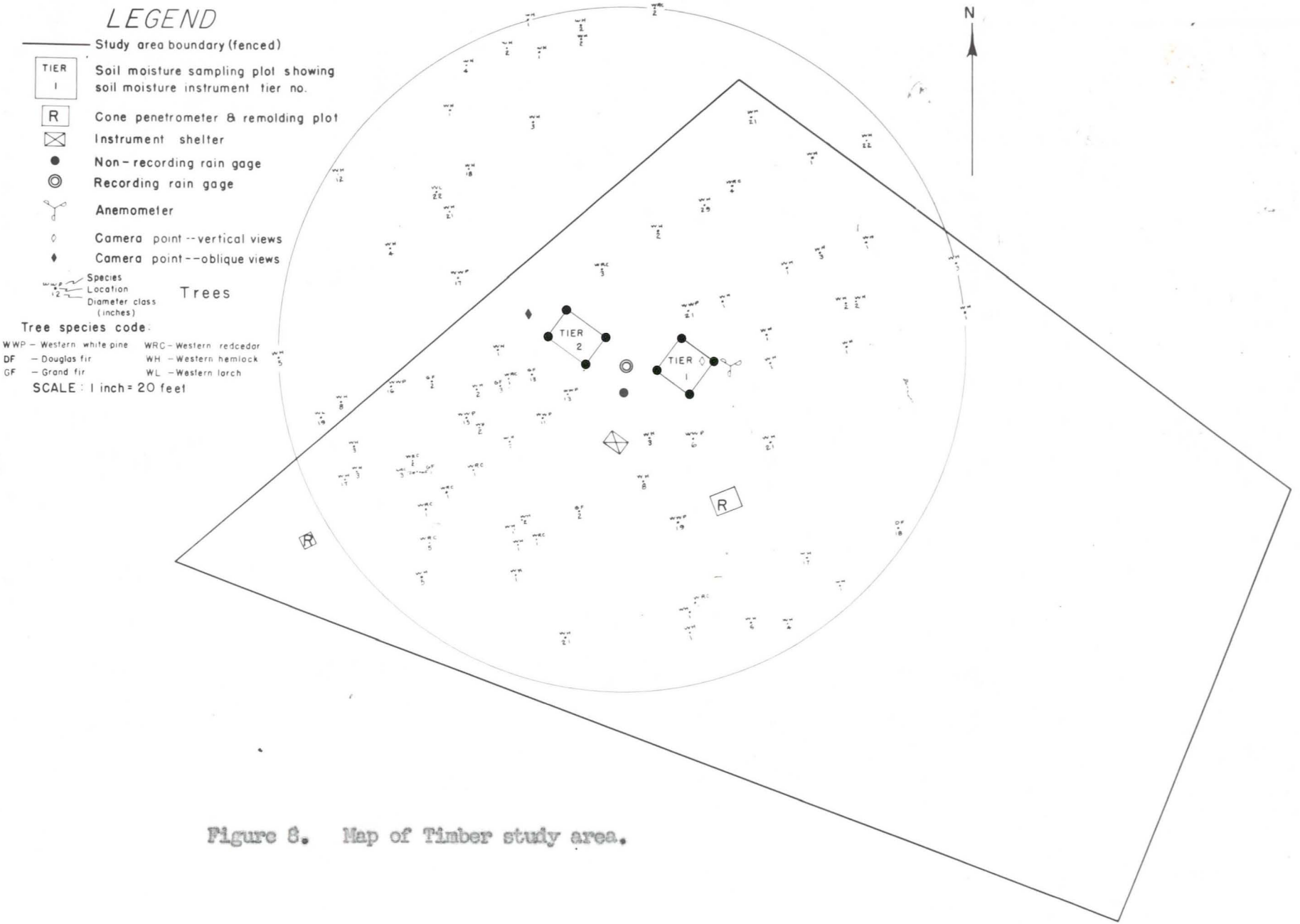

Figure 8. Map of Timber study area.

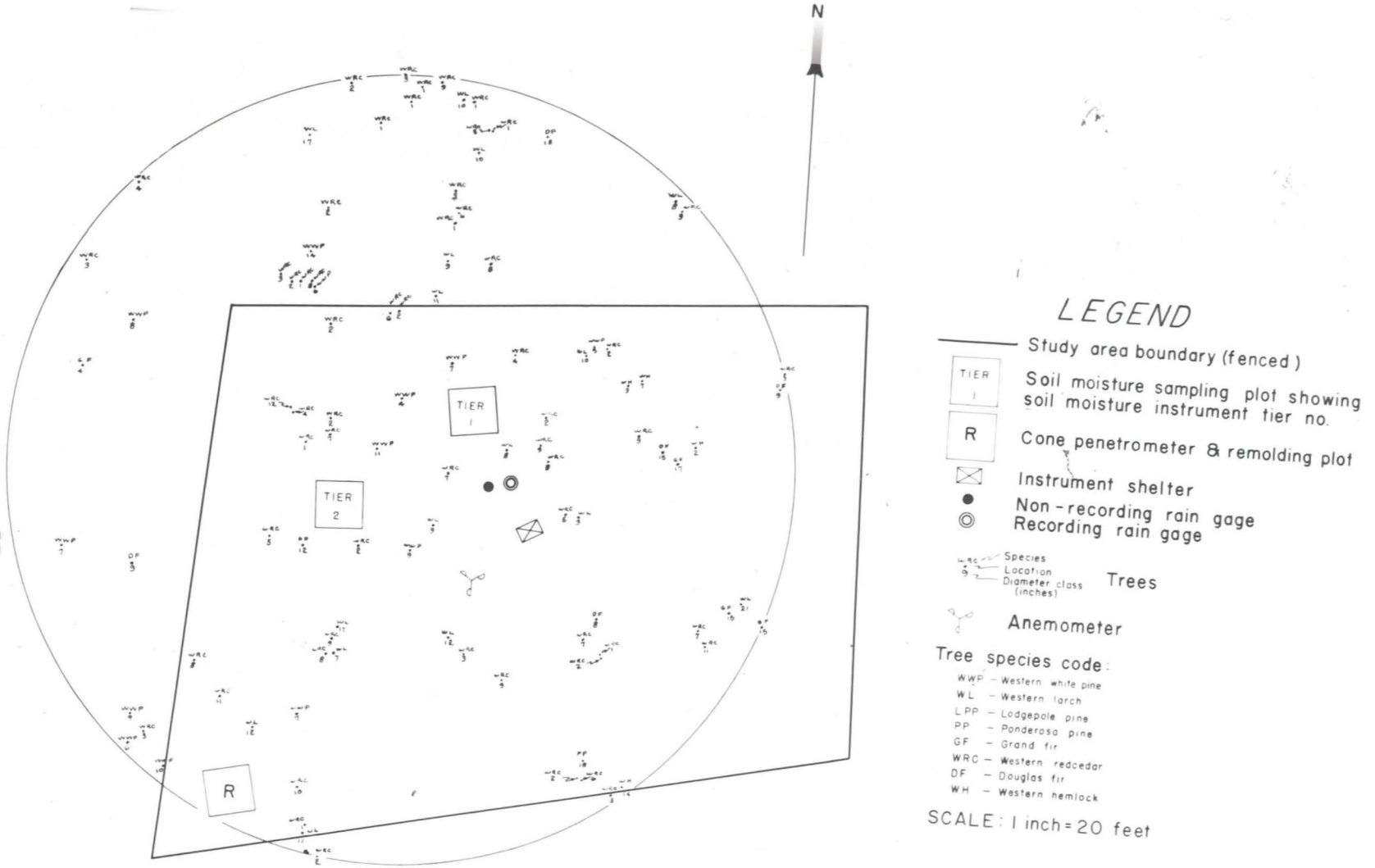

Figure 9. . Map of Benton Study area.

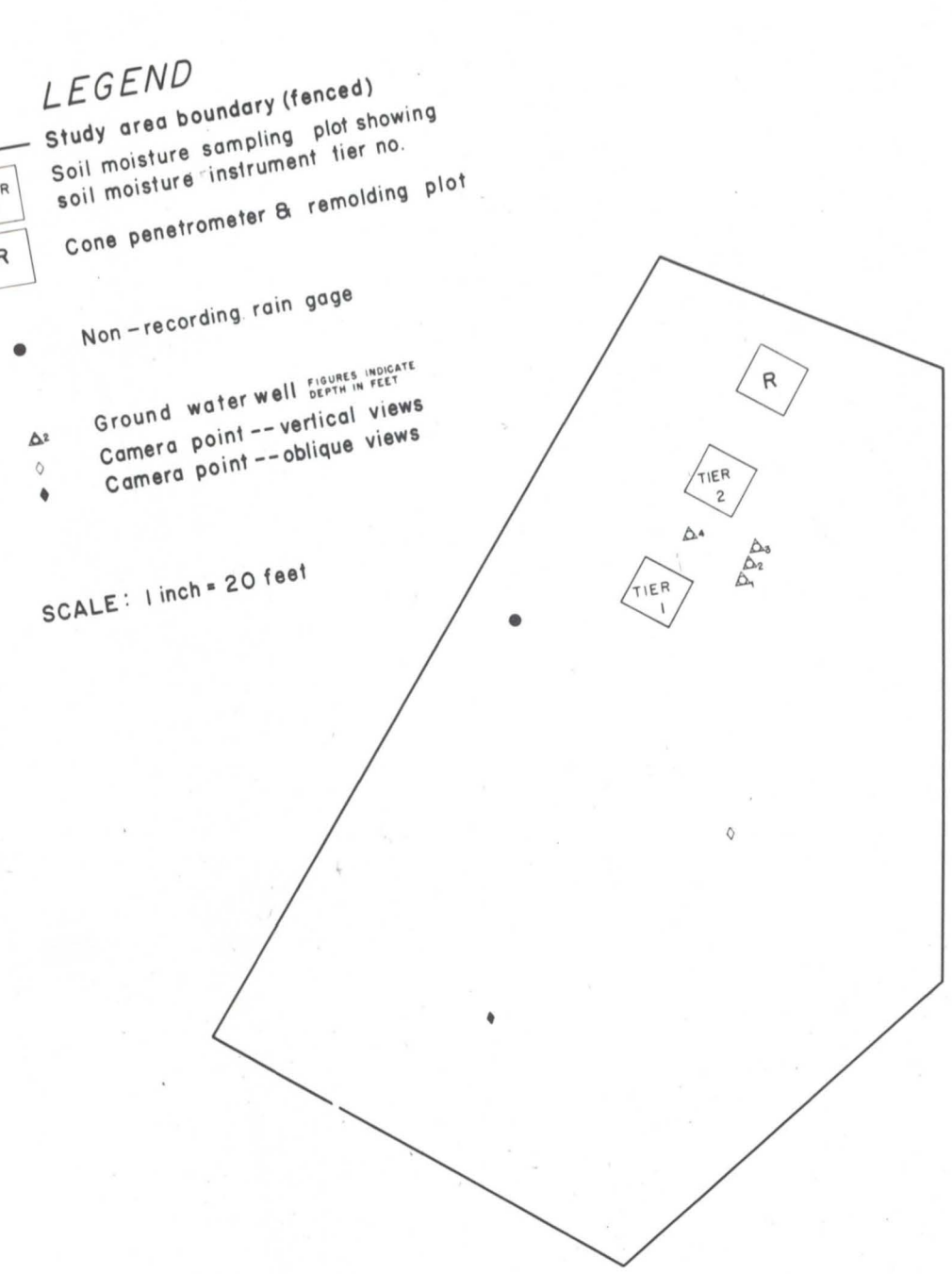

Figure 10. Map of Meadow study area.

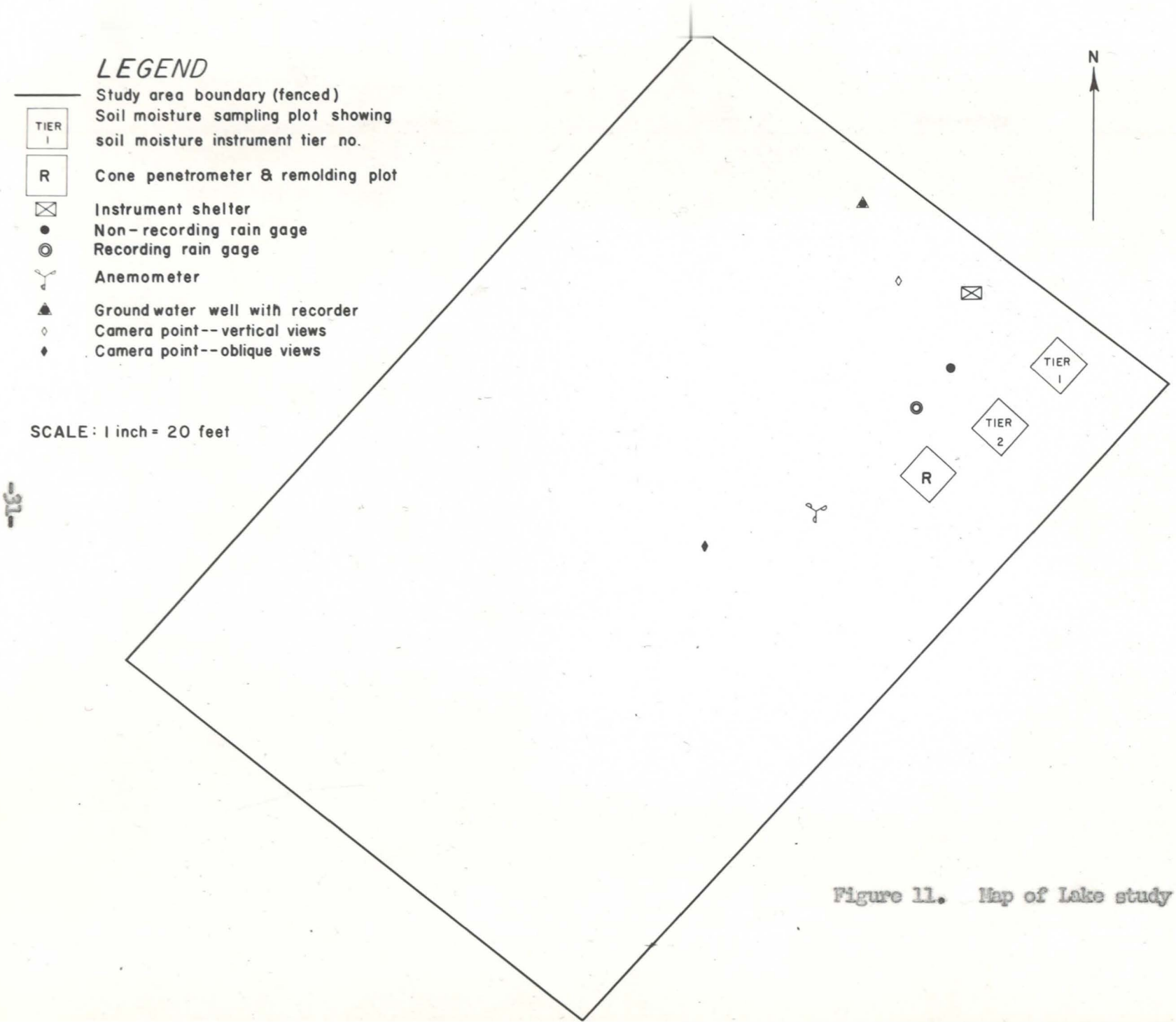

Figure 11. Map of Lake study area.

Ground water at the Lake site was measured with a portable water stage recorder on a 10-foot cased well. In 1953 four wells were dug at the Meadow site to depths of 1, 2, 3, and 4 feet.

Fiberglas soil moisture instruments were installed by the auger-hole method described by Reinhart (10) at the midpoints of 3-inch horizons, e.g., $1\frac{1}{2}$, $4\frac{1}{2}$, $7\frac{1}{2}$, $10\frac{1}{2}$, $13\frac{1}{2}$, $16\frac{1}{2}$, $19\frac{1}{2}$, $22\frac{1}{2}$, 32, and 42 inches, except at the Lake and Meadow sites where only the first eight depths above were used. Units were calibrated by frequent gravimetric determinations of moisture content of samples taken at random from a 6-foot square sampling plot (figure 12) around each tier of fiberglas instruments. Ground cover and the soil surface were not disturbed on the soil moisture sampling plots at the Burn, Timber, Benton, and Lake sites. At the Meadow site one sampling plot was devegetated by burning (figure 12) and the other plot was left with its natural vegetation undisturbed.

Soil moisture content in inches was determined daily on the basis of soil temperature, the calibration curves for each electrical soil moisture instrument, and bulk densities. Daily values were added to show soil moisture by the 0-6 inch and 6-12 inch depths.

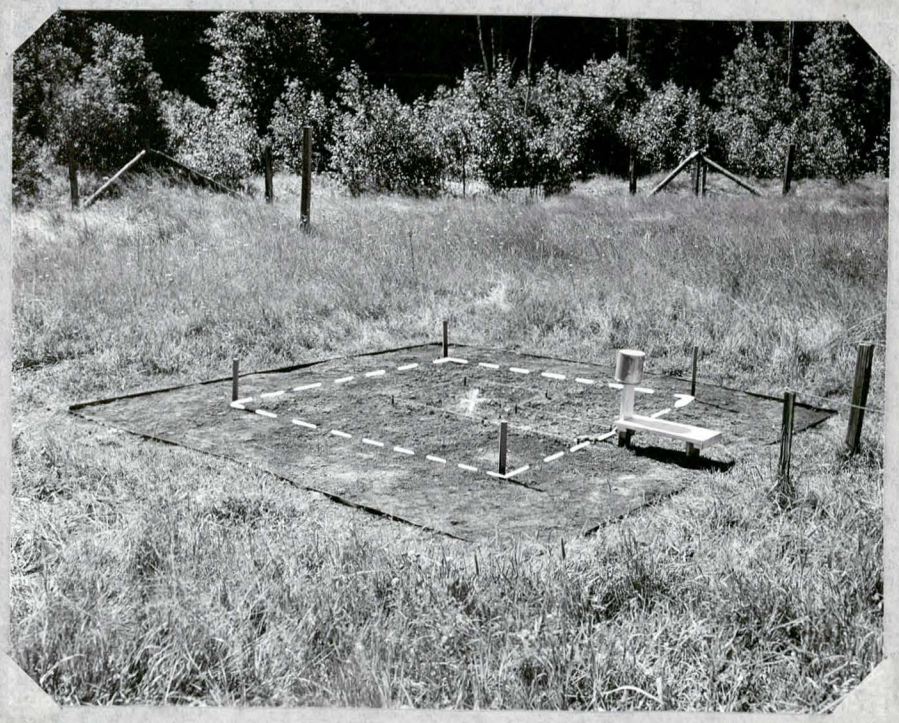

Figure 12. Devegetated soil moisture sampling plot at the Meadow site. The tier of soil moisture instruments, located under the symbol "x", and lead wires are within the center area bounded by string. The can protects the wire terminal from the weather. Dashed lines outline the 6-foot square sampling plot. Burned area is bounded by sheet iron strips which cut off roots of border vegetation.

Precipitation

Normal July-October, inclusive, precipitation at the Experimental Forest headquarters is 6.22 inches (table 6). The same period in 1952 was considerably drier than normal with a total of 1.60 inches of precipitation, distributed as shown in table 8. An important deviation from monthly normals occurred in June when precipitation was 207 percent of normal. Deviations in the July-October period ranged from 18 to 53 percent of normal. Normal precipitation for the April-August, inclusive, period totals 7.79 inches. Precipitation in 1953 for this period was 10.19 inches at headquarters, 131 percent of normal. July moisture was deficient - only 10 percent of normal. August precipitation was excessive - 252 percent of normal. Precipitation amounts for April, May, and June were 129, 111, and 145 percent of normal, respectively.

Daily precipitation is shown in tables 9-40, inclusive.

The higher rainfall intensities observed are summarized in table 41. By far the greatest percentage of rainfall occurs at intensities of less than 0.5 inch per hour, very often at intensities less than 0.3 to 0.4 inch per hour. Intensity-duration graphs for two storms with high intensity "bursts" at the Lake site are shown in figure 13. Figure 14 shows the intensity-duration relationships for two storms of a more common type.

Rainfall storm-size occurrence based on observational day total rainfall for the period of record at the study sites was very nearly the same as for the March-October, inclusive, daily rainfall for the decade ending in 1952 at the headquarters meteorological station (figure 15).

Table 8. Monthly precipitation

Month	Site					Headquarters 1/	
	Burn	Timber Tier 2	Benton	Meadow	Lake	Current	Departure from normal
	Inches						
1952							
July	.10 2/	.08 2/	.06 2/	.17 2/	.10 2/	.46	-.38
August	.24	.21	.13	.24	.30	.22	-.74
September	.51	.43	.35	.52	.49	.45	-1.30
October	.25	.21	.26	.37	.33	.47	-2.17
1953							
April	-	-	-	3.04	-	2.47	.56
May	2.12 3/	1.80 3/	-	2.38	-	2.33	.23
June	2.80	2.51	-	2.97	-	2.88	.90
July	.09 4/	.06 4/	-	.08 4/	.04	.09	-.75
August	-	-	-	-	.76 4/	2.42	1.46

1/ From U.S.W.B. Monthly Climatological Summaries, Idaho Section
2/ Dates 7-31, inclusive
3/ Dates 4-31, inclusive
4/ Dates 1-20, inclusive

Table 9. Soil moisture and temperature and related factors

BURN JULY 1952

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE BURN MONTH JULY 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3 (Inches)	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2 (Degrees F)	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1 (Inches)	TIER 2	AIR TEMPERATURE MAXIMUM (Degrees F)	MINIMUM	MEAN	RELATIVE HUMIDITY (Percent)	WIND VELOCITY (mph)				TIME (Hours)
1																															
2																															
3																															
4																															
5																															
6																															
7	.80	1.12	1.92	1.19	1.06	2.25	.89	.97	1.86	1.12	--	--	64	53	51	50	68	55	53	51											1450
8	.78	1.11	1.89	1.18	1.05	2.23	.91	1.26	2.17	1.11	--	--	60	52	52	50	59	52	52	52											1055
9	.71	1.05	1.76	1.16	.94	2.10	.83	1.10	1.93	1.06	.70	1.76	75	60	57	54	73	63	56	54									.24		1555
10	.75	1.07	1.83	1.13	.92	2.05	.85	1.09	1.94	1.06	.68	1.74	57	54	53	52	60	58	56	55									.03		0835
11	.73	1.03	1.76	1.06	.86	1.92	.81	1.06	1.87	1.01	.64	1.65	56	54	54	52	58	58	56	56									.16		0815
12	.72	1.04	1.76	.99	.84	1.83	.77	1.00	1.77	1.00	.64	1.64	59	54	55	53	62	59	56	56									.31		1020
13	.74	1.05	1.79	1.00	.81	1.81	.81	.96	1.77	.99	.66	1.65	54	50	52	52	50	58	55	56									.32		1000
14	.71	.98	1.69	1.01	.78	1.79	.81	.93	1.74	.95	.63	1.58	58	53	54	52	59	57	56	56									.18		0915
15	.69	.93	1.62	.96	.72	1.68	.80	.92	1.72	.93	.59	1.52	69	58	55	53	72	63	58	56											1550
16	.72	.96	1.68	.94	.72	1.66	.79	.92	1.71	.92	.59	1.51	53	53	54	54	56	56	55	56			81	36	61.0	65					0830
17	.68	.91	1.59	.91	.70	1.61	.79	.91	1.70	.89	.59	1.48	59	53	54	53	58	56	55	56	.02	.02	74	39	56.2	75	.28				0925
18	.61	.89	1.50	.88	.68	1.56	.75	.89	1.64	.93	.55	1.48	65	55	54	52	64	58	54	54			76	39	58.1	69	.13				1435
19	.66	.86	1.52	.87	.67	1.54	.75	.89	1.64	.93	.54	1.47	63	55	54	52	63	57	55	54	.08	.08	75	45	58.3	80	.12				1355
20	.64	.88	1.52	.87	.66	1.53	.75	.88	1.63	.92	.53	1.45	60	53	53	52	61	56	54	55			73	40	54.4	76	.19				1300
21	.66	.86	1.52	.86	.65	1.51	.75	.87	1.62	.91	.53	1.44	53	52	53	52	54	54	53	54			72	36	53.8	69	.16				0925
22	.57	.87	1.44	.84	.64	1.48	.70	.84	1.54	.88	.52	1.40	62	55	53	51	64	58	55	54			76	32	55.3	71	.35				1835
23	.55	.87	1.42	.83	.61	1.44	.67	.83	1.50	.87	.51	1.38	64	54	53	51	64	57	53	53			83	42	63.6	63	.23				1400
24	.57	.85	1.42	.82	.61	1.43	.68	.82	1.50	.85	.51	1.36	53	53	53	52	55	55	54	54			71	39	55.4	72	.20				0810
25	.50	.82	1.32	.80	.57	1.37	.63	.79	1.42	.83	.49	1.32	63	53	52	51	63	56	52	52			87	36	59.7	68	.31				1435
26	.53	.82	1.35	.79	.60	1.39	.64	.78	1.42	.82	.48	1.30	53	52	53	52	55	55	53	54			90	38	64.0	62	.14				0830
27	.50	.79	1.29	.77	.61	1.38	.61	.75	1.36	.79	.47	1.26	52	52	53	52	54	55	54	55			87	36	63.1	65	.37				0820
28	.48	.78	1.26	.77	.59	1.36	.58	.74	1.32	.77	.46	1.23	55	52	53	52	56	55	54	54			90	42	65.8	65	.18				0850
29	.46	.75	1.21	.74	.56	1.30	.56	.72	1.28	.75	.45	1.20	54	53	55	54	56	56	55	56			93	41	67.1	64	.15				0800
30	.44	.69	1.13	.73	.56	1.29	.51	.68	1.19	.73	.44	1.17	58	58	54	53	58	57	55	56			95	42	67.7	58	.13				0915
31	.44	.71	1.15	.72	.53	1.25	.48	.66	1.14	.71	.43	1.14	54	55	55	55	57	57	55	56			93	40	65.2	66	.02				0820
SUMS 1-10																					.00	.00									
SUMS 11-20																					.10	.10									
SUMS 21-31																					.00	.00									
SUMS Month																					.10	.10									
MEANS 1-10	.76	1.09	1.84	1.16	.99	2.16	.87	1.10	1.98	1.06	.69	1.75	64.0	54.8	53.2	51.5	65.0	57.0	54.2	53.0			--	--	--	--	.12				
MEANS 11-20	.69	.95	1.64	.95	.74	1.69	.78	.94	1.72	.95	.60	1.54	59.6	53.8	53.9	52.5	60.3	57.7	56.4	55.5			75.8	39.8	57.6	72.9	.21				
MEANS 21-31	.52	.80	1.32	.79	.59	1.38	.62	.77	1.39	.81	.48	1.29	56.4	53.4	53.4	47.7	57.8 52.4	55.9	53.9	54.4			85.2	38.5	61.8	65.7	.20				
MEANS Month	.62	.91	1.53	.91	.72	1.63	.72	.89	1.62	.89	.55	1.44	58.9	53.8	53.6	52.2	60.0	56.8	54.6	54.6			82.2	38.9	60.5	67.9	.20				

[1] A = artificial precipitation.

Table 10. Soil moisture and temperature and related factors

B U R N A U G U S T 1952

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE BURN MONTH AUGUST 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.44	.66	1.10	.69	.52	1.21	.43	.62	1.05	.68	.42	1.10	69	56	54	53	70	62	57	56			88	46	65.9	64	.36				1510
2	.40	.67	1.07	.69	.51	1.20	.42	.62	1.04	.67	.42	1.09	52	54	55	54	56	57	56	56			90	38	65.2	59	.09				0735
3	.36	.62	.98	.67	.49	1.16	.35	.58	.93	.64	.40	1.04	72	59	56	54	71	61	57	56			92	42	67.7	63	.18				1525
4	.35	.61	.96	.65	.48	1.13	.34	.56	.90	.63	.40	1.03	68	57	56	53	57	60	56	56			94	44	68.0	66	.08				1330
5	.35	.59	.94	.64	.46	1.10	.32	.55	.87	.62	.39	1.01	64	58	57	55	69	61	58	57			92	47	68.0	56	.24				1415
6	1.13	1.05	2.18	1.02	.79	1.81	.30	.53	.83	.61	.39	1.00	60	60	59	58	68	60	57	56	2.10		80	45	60.9	59	.26				1610
7	1.17	1.07	2.24	1.03	.86	1.89	.30	.51	.81	.59	.38	.97	54	57	58	55	63	58	56	56	.63		78	40	60.3	65	.08				1500
8	1.14	1.06	2.20	1.05	.86	1.91	.29	.50	.79	.58	.37	.95	56	56	56	54	68	59	56	56	.42		87	48	66.8	60	.16				1435
9	1.07	1.01	2.08	1.01	.83	1.84	.29	.49	.78	.58	.37	.95	61	56	55	54	58	57	55	56	.42		90	43	67.6	62	.04				0910
10	1.13	1.17	2.30	1.08	.91	1.99	.30	.50	.80	.57	.37	.94	58	55	56	54	60	58	56	56	.42	.22	71	46	59.0	79	.09				0925
11	1.06	1.08	2.14	1.07	.84	1.91	.31	.50	.81	.57	.37	.94	54	54	54	54	57	56	54	56			84	40	60.8	65	.47				1015
12	1.00	.99	1.99	1.07	.78	1.85	.30	.50	.80	.57	.37	.94	54	54	54	53	56	55	54	55			88	42	63.8	64	.27				0900
13	.97	1.03	2.00	1.04	.76	1.80	.29	.48	.77	.56	.36	.92	59	54	55	54	61	58	55	56			90	44	64.5	60	.02				1110
14	.90	.96	1.86	.98	.76	1.74	.29	.48	.77	.54	.36	.90	57	53	54	53	58	56	55	56			84	40	60.0	60	.37				1055
15	.88	.89	1.77	.92	.71	1.63	.28	.47	.75	.53	.35	.88	52	53	54	53	55	55	54	55			74	34	54.2	68	.36				0920
16	.83	.86	1.69	.96	.66	1.62	.28	.46	.74	.52	.35	.87	52	51	52	52	54	54	53	55			75	29	55.8	63	.41				1045
17	.80	.86	1.66	.90	.65	1.55	.28	.47	.75	.53	.35	.88	52	52	54	53	50	49	48	50			82	34	57.3	60	.33				1010
18	.78	.83	1.61	.88	.61	1.49	.27	.45	.72	.51	.34	.85	52	52	52	52	54	54	53	54			78	37	54.8	66	.24				1015
19	.81	.80	1.61	.85	.57	1.42	.27	.45	.72	.51	.34	.85	48	52	53	53	51	53	52	54			75	30	53.0	65	.39				0820
20	.79	.77	1.56	.81	.59	1.40	.27	.44	.71	.50	.34	.84	46	49	52	51	51	51	51	53			79	34	56.3	63	.28				0905
21	- - - No record - - - - -						.27	.42	.69	.49	.33	.82	59	51	52	51	59	55	53	54			84	53	56.9	61	.24				1355
22	.67	.69	1.36	.76	.53	1.29	- - - - No Record - - - -						62	53	52	52	-- No Record --						80	35	58.4	63	.09				
23	.59	.63	1.22	.72	.50	1.22	.27	.42	.69	.49	.33	.82	56	52	52	52	56	54	52	52			78	34	56.7	63	.94				1150
24	.51	.62	1.13	.70	.48	1.18	.26	.40	.66	.47	.32	.79	61	53	52	52	61	56	53	53			76	35	56.0	70	.46				1550
25	.50	.60	1.10	.69	.47	1.16	.26	.41	.67	.48	.32	.80	50	51	52	52	51	53	51	53	.02	.02	70	34	50.4	72	.11				0810
26	.47	.58	1.05	.67	.45	1.12	.26	.41	.67	.47	.32	.79	54	50	51	51	57	52	51	50			70	30	48.0	68	.37				1500
27	.97	1.03	2.00	1.00	.70	1.70	.26	.42	.68	.48	.32	.80	53	53	54	54	-- No Record --				1.59		74	31	49.9	68	.00				
28	1.01	1.24	2.25	1.19	.95	2.14	.26	.41	.67	.48	.32	.80	50	51	52	51	57	53	50	51	1.55		74	30	53.6	61	.27				1430
29	1.02	1.31	2.33	1.23	1.07	2.30	.26	.41	.67	.48	.32	.80	53	53	53	52	53	52	50	51	1.05		68	29	50.6	60	.16				0940
30	.93	1.06	1.99	1.16	.91	2.07	.26	.40	.66	.48	.32	.80	57	55	53	53	58	54	52	53			68	25	47.5	64	.68				1520
31	.91	1.01	1.92	1.13	.84	1.97	.26	.41	.67	.48	.32	.80	52	52	53	53	52	51	50	52	T	T	72	35	52.4	62	.10				0945
SUMS 1-10																					.22 3.99A	.22									
SUMS 11-20																					.00	.00									
SUMS 21-31																					.02 4.29A	.02									
SUMS Month																					.24 8.28A	.24									
MEANS 1-10	.75	.85	1.60	.85	.67	1.52	.33	.55	.88	.62	.39	1.01	61.4	57.0	56.2	54.4	65.0	59.3	56.4	56.1			86.2	43.7	65.0	63.3	.16				
MEANS 11-20	.88	.91	1.79	.95	.69	1.64	.28	.47	.75	.53	.35	.89	52.6	52.4	53.4	52.8	54.7	54.1	52.9	54.4			80.9	36.4	57.8	63.3	.31				
MEANS 21-31	.76	.88	1.64	.92	.69	1.62	.26	.41	.67	.48	.32	.80	55.2	52.0	52.4	52.1	56.0	53.3	51.3	52.1			74.0	31.9	52.7	64.7	.31				
MEANS Month	.80	.88	1.67	.91	.68	1.59	.29	.78	.77	.54	.36	.90	56.4	53.8	54.0	53.1	58.6	55.6	53.6	54.3			80.2	37.2	58.5	63.8	.26				

Table 11. Soil moisture and temperature and related factors

BURN SEPTEMBER 1952

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE B U R N MONTH SEPTEMBER 195 2

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.86	.94	1.80	1.09	.79	1.88	.26	.41	.67	.46	.31	.77	51	49	50	50	50	50	50	50			77	30	52.7	65	.36				1120
2	.81	.89	1.70	.95	.88	1.83	.26	.39	.65	.47	.31	.78	47	49	51	50	49	50	48	50			82	32	56.3	63	.22				0925
3	.79	.86	1.65	.97	.70	1.67	.26	.40	.66	.46	.31	.77	50	50	51	50	53	53	50	52			76	43	56.8	66	.28				0850
4	.80	.86	1.66	.94	.66	1.60	.26	.39	.65	.46	.31	.77	46	51	52	52	50	53	52	54			79	33	52.6	54	.13				0750
5	.76	.83	1.59	.94	.65	1.59	.26	.38	.64	.45	.30	.75	48	51	53	53	54	55	55	57			70	36	50.0	69	.31				0750
6	.71	.79	1.50	.91	.59	1.50	.26	.41	.67	.46	.31	.77	54	52	52	52	53	51	50	52			69	41	51.8	79	.19				1020
7	.73	.78	1.51	.88	.57	1.45	.26	.41	.67	.47	.31	.78	46	51	52	52	50	51	50	52	.03	.03	63	28	44.6	71	.28				0805
8	.67	.74	1.41	.84	.57	1.41	.26	.41	.67	.46	.31	.77	52	50	51	51	52	50	50	50	.01	.01	57	30	42.6	87	.23				1410
9	.75	.79	1.54	.91	.57	1.48	.33	.43	.76	.47	.31	.78	53	51	51	51	53	51	50	51	.38	.38	53	43	47.2	91	.00				1345
10	.70	.79	1.49	.92	.58	1.50	.35	.47	.82	.48	.31	.79	59	51	51	50	56	53	50	50	T	T	67	38	51.2	79	.07				1325
11	.73	.75	1.48	.89	.57	1.46	.33	.44	.77	.47	.30	.77	57	50	50	50	52	50	48	49			73	33	49.3	75	.13				1325
12	.83	.85	1.68	.97	.66	1.63	.32	.45	.77	.48	.31	.79	52	51	52	51	51	51	50	51	.05 .54A	.05	61	23	44.2	77	.10				0915
13	1.00	1.10	2.10	1.26	1.06	2.32	.32	.45	.77	.47	.31	.78	46	47	50	50	44	45	46	50	.04 2.22A	.04	65	21	41.3	70	.26				1110
14	.94	1.01	1.95	1.21	.96	2.17	.32	.45	.77	.47	.31	.78	48	48	50	50	44	56	50	50			71	26	46.5	70	.15				1105
15	.89	.96	1.85	1.17	.88	2.05	.31	.45	.76	.48	.31	.79	43	47	50	50	44	45	45	49			76	30	49.4	68	.07				0900
16	.85	.89	1.74	1.14	.81	1.95	.30	.45	.75	.48	.31	.79	42	47	50	50	45	47	48	50			77	30	51.0	66	.23				0800
17	.83	.89	1.72	1.11	.76	1.87	.30	.43	.73	.47	.31	.78	45	47	49	50	47	49	48	50			80	35	54.2	65	.23				0820
18	.78	.86	1.64	1.08	.73	1.81	.29	.43	.72	.47	.31	.78	60	52	52	51	58	53	50	50			84	36	57.3	68	.32				1440
19	.75	.85	1.60	1.05	.71	1.76	.29	.44	.73	.47	.31	.78	55	50	50	50	52	50	50	50			81	34	56.3	64	.07				1115
20	.80	.80	1.60	1.03	.68	1.71	.29	.44	.73	.48	.31	.79	50	50	51	51	50	50	50	50			79	35	56.4	57	.19				1010
21	.73	.81	1.54	.96	.65	1.61	.28	.43	.71	.47	.31	.78	52	49	50	50	50	50	50	50			79	37	55.7	60	.16				1105
22	.73	.77	1.50	.97	.63	1.60	.28	.42	.70	.47	.31	.78	47	48	50	50	47	48	47	50			82	32	52.0	68	.19				1035
23	.66	.74	1.40	.92	.58	1.50	.28	.42	.70	.47	.31	.78	45	49	51	51	46	48	49	50			82	31	52.4	67	.14				0845
24	.58	.70	1.28	.88	.58	1.46	.27	.42	.69	.47	.31	.78	60	51	50	50	56	50	50	50			83	32	53.4	64	.27				1435
25	.57	.69	1.26	.86	.57	1.43	.27	.42	.69	.47	.31	.78	52	48	50	49	50	49	47	50			85	32	55.4	62	.08				1200
26	.53	.67	1.20	.83	.54	1.37	.27	.41	.68	.47	.31	.78	52	49	50	50	51	50	48	50			84	40	60.6	52	.15				1120
27	.49	.64	1.13	.80	.57	1.37	.27	.41	.68	.47	.31	.78	50	50	52	51	50	50	50	50			69	30	48.5	66	.48				1020
28	.47	.63	1.10	.77	.51	1.28	.27	.42	.69	.47	.31	.78	46	47	50	50	48	48	48	50			71	33	49.2	69	.38				1005
29	.45	.60	1.05	.75	.50	1.25	.27	.42	.69	.47	.31	.78	42	46	48	48	45	46	46	50			74	31	49.8	70	.33				0925
30	.42	.58	1.00	.72	.46	1.18	.27	.41	.69	.46	.30	.76	52	50	50	49	53	50	48	49			70	28	46.9	72	.42				1800
31																															
SUMS 1-10																					.42	.42									
SUMS 11-20																					.09 2.76A	.09									
SUMS 21-31																					.00	.00									
SUMS Month																					.51 2.76A	.51									
MEANS 1-10	.76	.83	1.58	.94	.66	1.59	.28	.41	.69	.46	.31	.77	50.6	50.5	51.4	51.1	52.0	51.7	50.5	51.8			69.3	35.4	50.6	72.5	.21				
MEANS 11-20	.84	.90	1.74	1.09	.78	1.87	.31	.44	.75	.47	.31	.78	49.6	48.9	50.4	50.3	48.7	48.6	48.5	49.9			74.7	30.3	50.6	68.0	.18				
MEANS 21-31	.56	.68	1.25	.85	.56	1.40	.27	.42	.69	.47	.31	.78	49.8	48.7	50.1	49.8	49.6	48.9	48.3	49.9			77.9	32.6	52.4	65.0	.26				
MEANS Month	.72	.80	1.52	.96	.66	1.62	.28	.42	.71	.47	.31	.78	50.0	49.3	50.6	50.3	50.0	49.7	49.0	50.5			73.9	32.7	51.1	68.4	.21				

Table 12. Soil moisture and temperature and related factors

B U R N O C T O B E R 1952

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE B U R N MONTH O C T O B E R 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.39	.56	.95	.70	.45	1.15	.27	.41	.68	.47	.31	.78	54	49	49	49	54	50	47	49	1.05		73	29	47.3	70	.21				1555
2	.85	.95	1.80	.82	.53	1.35	.27	.41	.68	.47	.30	.77	44	47	50	50	44	45	45	49	4.90		74	27	47.0	71	.02				1005
3	1.01	.94	1.95	1.21	.88	2.09	.27	.41	.68	.47	.30	.77	45	49	50	50	43	45	46	49			72	24	44.6	63	.25				0805
4	.93	.92	1.85	1.17	.84	2.01	.27	.42	.69	.47	.31	.78	38	45	47	48	40	42	44	47			69	22	42.3	61	.20				0950
5	.89	.89	1.78	1.13	.80	1.93	.27	.41	.68	.47	.31	.78	38	43	46	47	41	43	44	47			70	24	43.6	68	.15				0955
6	.89	.88	1.77	1.09	.74	1.83	.27	.42	.69	.47	.31	.78	37	42	46	46	39	42	43	45			72	26	44.7	71	.14				0815
7	.89	.84	1.73	1.06	.72	1.78	.27	.42	.69	.47	.31	.78	39	42	45	46	41	42	43	45			73	25	45.0	69	.14				1100
8	.85	.82	1.67	1.01	.69	1.70	.27	.42	.69	.47	.31	.78	46	43	45	45	47	44	44	45			70	26	44.0	72	.13				1405
9	.85	.81	1.64	.99	.67	1.66	.27	.42	.69	.47	.30	.77	39	44	46	46	42	44	44	48			70	27	45.3	73	.05				0850
10	.81	.79	1.60	1.00	.65	1.65	.27	.39	.66	.47	.30	.77	37	42	44	45	40	42	43	45			69	26	45.0	79	.15				0920
11	.77	.75	1.52	.97	.67	1.64	.26	.40	.66	.46	.30	.76	46	43	46	46	48	45	44	45			68	28	45.7	78	.11				1340
12	.75	.74	1.49	.96	.64	1.60	.26	.41	.67	.46	.30	.76	41	42	44	45	43	43	43	45			68	28	44.1	73	.13				1150
13	.66	.70	1.36	.91	.61	1.52	.28	.41	.69	.47	.30	.77	40	42	45	45	39	42	43	45			61	26	40.1	68	.41				0855
14	.67	.69	1.36	.89	.58	1.47	.27	.42	.69	.47	.31	.78	38	41	43	45	45	43	43	45			57	20	35.3	69	.31				1605
15	.64	.67	1.31	.86	.58	1.44	.27	.41	.68	.46	.30	.76	34	38	42	42	40	39	40	43			57	21	35.8	70	.11				1335
16	.61	.65	1.26	.84	.56	1.40	.27	.41	.68	.46	.30	.76	42	41	42	43	45	43	43	44			63	27	40.4	75	.17				1520
17	.59	.65	1.24	.82	.55	1.37	.27	.41	.68	.46	.30	.76	38	38	42	42	42	41	40	43			63	24	39.4	79	.09				1410
18	.55	.64	1.19	.81	.53	1.34	.27	.41	.68	.46	.30	.76	33	38	41	42	37	39	40	43			65	24	40.9	80	.03				1045
19	.55	.62	1.17	.79	.52	1.31	.27	.41	.68	.46	.30	.76	36	38	41	42	40	40	40	42			61	28	40.9	81	.09				1230
20	.53	.63	1.16	.79	.52	1.31	.27	.41	.68	.46	.30	.76	38	38	41	42	41	41	41	42			62	29	45.5	82	.05				1210
21	.53	.61	1.14	.77	.51	1.28	.27	.41	.68	.47	.30	.77	46	42	42	42	40	41	42	44	T	T	64	32	47.2	83	.11				1600
22	.90	.98	1.88	1.20	.92	2.12	.27	.42	.69	.47	.30	.77	42	44	45	44	40	42	42	44	2.80		62	30	40.4	86	.00				0718
23	.94	.94	1.88	1.15	.89	2.04	.27	.42	.69	.47	.30	.77	40	41	43	43	42	41	41	44			61	26	39.3	86	.07				1335
24	.92	.92	1.84	1.13	.83	1.96	.27	.42	.69	.47	.31	.78	38	40	42	43	40	41	41	42	.03	.03	56	29	39.2	85	.01				0955
25	.93	.89	1.82	1.09	.80	1.89	.27	.43	.70	.47	.31	.78	34	38	42	42	35	39	40	43			52	20	32.6	85	.26				0810
26	.90	.86	1.76	1.09	.74	1.83	.27	.42	.69	.47	.31	.78	32	36	39	41	36	36	37	41			52	18	32.1	84	.04				1515
27	.87	.87	1.74	1.09	.73	1.82	.28	.45	.73	.48	.31	.79	32	32	38	40	32	34	36	40			53	21	33.6	85	.02				1030
28	.85	.83	1.68	1.07	.70	1.77	.28	.44	.72	.48	.31	.79	30	35	38	39	32	35	36	40			55	20	33.1	84	.03				1105
29	.84	.82	1.66	1.04	.68	1.72	.28	.43	.71	.48	.31	.79	32	35	38	39	37	37	37	40			46	28	36.9	87	.05				1345
30	.93	.83	1.76	1.07	.72	1.79	.28	.43	.71	.48	.31	.79	33	35	38	38	39	39	38	40	.22	.22	45	29	37.2	98	.00				0855
31	.91	.82	1.73	1.09	.66	1.75	.28	.43	.71	.47	.31	.78	38	38	37	38	41	40	39	41	T	T	41	28	33.4	94	.06				1630
SUMS 1-10	8.34																				5.95	.00									
SUMS 11-20																					.00	.00									
SUMS 21-31																					.25 2.80A	.25									
SUMS Month																					.25 8.75A	.25									
MEANS 1-10	.83	.84	1.67	1.02	.70	1.72	.27	.41	.68	.47	.31	.78	41.7	44.6	46.8	47.2	43.1	43.9	44.3	46.9			71.2	25.6	44.9	69.7	.14				
MEANS 11-20	.65	.67	1.31	.86	.58	1.44	.27	.41	.68	.46	.30	.76	38.6	39.9	42.7	43.4	42.0	41.6	41.7	43.7			62.5	25.5	40.6	75.3	.15				
MEANS 21-31	.87	.85	1.72	1.07	.74	1.82	.27	.43	.70	.47	.31	.78	36.1	37.8	40.2	40.8	37.6	38.6	39.0	41.7			53.4	25.5	36.8	86.9	.06				
MEANS Month	.78	.79	1.57	.99	.68	1.66	.27	.42	.69	.47	.31	.77	38.7	40.7	43.2	43.8	40.9	41.3	41.6	44.1			62.1	25.6	40.6	77.6	.12				

Table 13. Soil moisture and temperature and related factors.

B U R N M A Y 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE BURN MONTH MAY 1953

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3 (Inches)	3-6 (Inches)	0-6 (Inches)	6-9 (Inches)	9-12 (Inches)	6-12 (Inches)	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3 (Inches)	3-6 (Inches)	0-6 (Inches)	6-9 (Inches)	9-12 (Inches)	6-12 (Inches)	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2 (Degrees F)	4-1/2 (Degrees F)	7-1/2 (Degrees F)	10-1/2 (Degrees F)	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2 (Degrees F)	4-1/2 (Degrees F)	7-1/2 (Degrees F)	10-1/2 (Degrees F)	PRECIPITATION[1] TIER 1 (Inches)	TIER 2 (Inches)	AIR TEMPERATURE MAXIMUM (Degrees F)	MINIMUM (Degrees F)	MEAN (Degrees F)	RELATIVE HUMIDITY (Percent)	WIND VELOCITY (mph)				TIME (Hours)
1																						46	32	39.1	90						
2																						54	29	40.5	77						
3																						66	27	46.8	65						
4	1.20	1.42	2.62	1.40	1.29	2.69	1.14	1.41	2.55	1.41	1.24	2.65	47	40	41	39	48	43	41	41	.20	.20	78	29	53.5	62						1035
5	1.19	1.40	2.59	1.37	1.24	2.61	1.13	1.40	2.53	1.39	1.15	2.54	52	42	42	41	51	45	43	43			83	34	58.4	61		1.26				1100
6	1.18	1.37	2.55	1.36	1.21	2.57	1.12	1.41	2.53	1.39	1.14	2.53	48	44	44	42	50	46	44	44			84	34	60.1	58		.35				0920
7	1.17	1.35	2.52	1.36	1.19	2.55	1.11	1.39	2.50	1.38	1.11	2.49	46	45	44	42	50	49	46	45	.05	.05	48	37	45.2	90		.81				1050
8	1.19	1.37	2.56	1.36	1.21	2.57	1.12	1.40	2.52	1.38	1.12	2.50	41	41	42	42	44	44	43	44	.09	.09	47	30	38.3	90		.30				0925
9	1.19	1.37	2.56	1.36	1.24	2.60	1.13	1.41	2.54	1.39	1.19	2.58	41	40	42	42	43	41	40	41	.14	.14	50	31	38.5	86		.56				1000
10	1.21	1.40	2.61	1.39	1.32	2.71	1.14	1.43	2.57	1.42	1.27	2.69	41	39	41	40	44	42	40	42	.24	.24	55	31	41.5	80		.57				1050
11	1.20	1.39	2.59	1.37	1.28	2.65	1.14	1.42	2.56	1.40	1.21	2.61	43	39	41	40	44	41	40	41	.01	.01	67	28	49.0	64		1.08				1000
12	1.18	1.38	2.56	1.37	1.24	2.61	1.13	1.41	2.54	1.40	1.15	2.55	38	41	42	41	42	43	42	43			72	30	52.0	59		.19				0750
13	1.18	1.37	2.55	1.36	1.21	2.57	1.12	1.42	2.54	1.37	1.18	2.55	40	42	43	42	44	44	44	44			74	31	54.5	58		.91				0740
14	1.10	1.35	2.45	1.34	1.17	2.51	1.11	1.38	2.49	1.37	1.11	2.48	57	44	44	42	50	47	44	44			74	40	55.3	66		.68				0910
15	1.16	1.32	2.48	1.33	1.13	2.46	1.11	1.38	2.49	1.37	1.07	2.44	45	45	45	42	48	47	45	45			72	39	54.3	67		1.40				0800
16	1.15	1.31	2.46	1.32	1.10	2.42	1.10	1.38	2.48	1.35	1.04	2.39	46	45	45	43	48	46	45	45			70	35	54.8	66		.18				0830
17	1.15	1.30	2.45	1.31	1.09	2.40	1.09	1.34	2.43	1.34	1.03	2.37	46	45	46	43	50	48	46	46			76	39	55.9	67		.57				0845
18	1.14	1.27	2.41	1.31	1.06	2.37	1.08	1.32	2.40	1.35	.97	2.30	47	47	47	45	50	49	47	47	.01	.01	72	40	55.9	74		.60				0750
19	1.13	1.27	2.40	1.31	1.05	2.36	1.09	1.34	2.43	1.33	.99	2.32	50	47	46	44	52	50	48	47	.07	.07	65	46	54.7	71		.70				0745
20	1.11	1.25	2.36	1.29	1.02	2.31	1.09	1.30	2.39	1.32	.96	2.28	46	46	47	45	48	49	47	47	T	T	56	30	44.3	69		.97				0750
21	1.13	1.23	2.36	1.28	1.01	2.29	1.09	1.27	2.36	1.32	.93	2.25	38	42	45	44	42	44	44	46			62	26	42.7	78		.80				0750
22	1.11	1.21	2.32	1.28	1.03	2.31	1.09	1.28	2.37	1.32	.95	2.27	42	43	44	43	45	45	44	45	.13	.13	59	30	43.9	75		.70				0800
23	1.11	1.21	2.32	1.28	1.01	2.29	1.08	1.27	2.35	1.31	.95	2.26	43	42	44	43	45	44	44	45	.02	.02	66	33	49.5	65		.66				0955
24	1.14	1.23	2.37	1.28	1.04	2.32	1.08	1.28	2.36	1.31	.93	2.24	45	46	46	44	47	47	45	46	.15	.15	52	43	46.5	90		.63				0820
25	1.13	1.23	2.36	1.28	1.01	2.29	1.08	1.27	2.35	1.31	.93	2.24	43	43	44	43	46	46	44	45	T	T	55	43	49.3	82		.19				0750
26	1.11	1.21	2.32	1.28	1.01	2.29	1.08	1.30	2.38	1.31	.94	2.25	42	43	44	43	44	44	44	44	T	T	60	39	48.3	85		.59				0740
27	1.24	1.43	2.67	1.42	1.42	2.84	1.16	1.49	2.65	1.44	1.41	2.85	44	44	45	44	45	45	44	45	.87	.87	58	36	48.0	83		.48				0710
28	1.22	1.41	2.63	1.39	1.34	2.73	1.15	1.47	2.62	1.42	1.29	2.71	46	44	45	44	47	45	44	45	.06	.06	78	35	56.3	67		.48				0835
29	1.21	1.39	2.60	1.38	1.27	2.65	1.13	1.45	2.58	1.32	1.16	2.48	48	47	46	45	51	50	48	48	T	T	74	44	56.0	78		.61				0800
30	1.20	1.39	2.59	1.37	1.27	2.64	1.13	1.45	2.58	1.39	1.15	2.54	50	48	48	46	51	50	49	49	.08	.08	56	33	47.3	73		.65				0935
31	1.19	1.38	2.57	1.37	1.23	2.60	1.12	1.43	2.55	1.39	1.11	2.50	46	44	46	45	48	46	45	47	T	T	73	31	55.3	67		.56				0905
SUMS 1-10																					.72	.72										
SUMS 11-20																					.09	.09										
SUMS 21-31																					1.31	1.31										
SUMS Month																					2.12	2.12										
MEANS 1-10	1.19	1.38	2.58	1.37	1.24	2.62	1.13	1.41	2.54	1.40	1.18	2.57	45.1	41.6	42.3	41.1	47.1	44.3	42.4	42.8			61.1	31.4	46.2	75.9		.64				
MEANS 11-20	1.15	1.32	2.47	1.33	1.14	2.47	1.11	1.37	2.43	1.36	1.07	2.43	45.8	44.1	44.6	42.7	47.6	46.4	44.8	44.9			69.8	35.8	52.9	66.1		.73				
MEANS 21-31	1.16	1.30	2.46	1.33	1.15	2.48	1.11	1.36	2.47	1.35	1.07	2.42	44.3	44.2	45.1	44.0	46.5	46.0	45.0	45.9			63.0	35.3	49.3	76.6		.58				
MEANS Month	1.16	1.33	2.49	1.34	1.17	2.51	1.11	1.37	2.49	1.36	1.10	2.46	45.0	43.5	44.2	42.8	47.0	45.7	44.3	44.8			64.6	34.2	49.4	72.9		.65				

Table 14. Soil moisture and temperature and related factors.

B U R N J U N E 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE BURN MONTH JUNE 195 3

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	1.20	1.38	2.58	1.37	1.24	2.61	1.12	1.45	2.57	1.39	1.12	2.51	52	48	47	46	53	50	48	48	.14	.14	75	50	60.5	72	.50				0755
2	1.20	1.38	2.58	1.36	1.23	2.59	1.12	1.41	2.53	1.37	1.11	2.48	52	50	50	47	55	54	51	50	.05	.05	67	40	56.2	79	.30				0735
3	1.17	1.36	2.53	1.35	1.19	2.54	1.10	1.39	2.49	1.36	1.06	2.42	46	47	48	46	49	49	48	48	T	T	61	39	51.2	72	.56				0740
4	1.21	1.39	2.60	1.37	1.27	2.64	1.12	1.43	2.55	1.38	1.12	2.50	49	47	48	46	50	49	47	48	.28	.28	61	45	52.4	88	.31				0840
5	1.21	1.40	2.61	1.37	1.29	2.66	1.13	1.43	2.56	1.37	1.15	2.52	49	48	49	46	50	50	48	49	.09	.09	65	46	55.6	77	.34				0750
6	1.19	1.39	2.58	1.37	1.27	2.64	1.12	1.41	2.53	1.37	1.11	2.48	50	49	49	47	51	50	49	49	.03	.03	68	44	56.1	73	.33				0805
7	1.18	1.37	2.55	1.36	1.23	2.59	1.11	1.39	2.50	1.36	1.09	2.45	49	48	48	47	51	50	49	49	.01	.01	53	45	49.7	94	.39				0845
8	1.21	1.41	2.62	1.40	1.35	2.75	1.13	1.45	2.58	1.40	1.20	2.60	48	48	49	47	50	50	48	49	.34	.34	60	44	50.7	78	.20				0820
9	1.20	1.40	2.60	1.38	1.31	2.69	1.11	1.42	2.53	1.31	1.14	2.45	45	46	47	46	48	48	47	48	T	T	69	38	54.4	70	.45				0750
10	1.18	1.39	2.57	1.38	1.25	2.63	1.11	1.42	2.53	1.37	1.12	2.49	46	46	47	46	49	48	47	48			79	56	59.5	64	.46				0820
11	1.15	1.36	2.51	1.36	1.19	2.55	1.11	1.40	2.51	1.36	1.06	2.42	52	49	49	47	53	51	50	49			83	46	65.0	65	.56				0755
12	1.15	1.33	2.48	1.34	1.14	2.48	1.09	1.36	2.45	1.35	1.03	2.38	52	52	51	49	54	54	51	50			82	47	63.6	72	.47				0735
13	1.24	1.45	2.69	1.42	1.42	2.84	1.15	1.50	2.65	1.44	1.35	2.79	52	52	52	49	53	53	51	51	.63	.63	54	45	48.5	92	.69				0710
14	1.21	1.42	2.63	1.41	1.36	2.77	1.14	1.46	2.60	1.41	1.27	2.68	47	48	49	48	49	49	48	49	.03	.03	65	44	54.8	76	.15				0750
15	1.20	1.41	2.61	1.39	1.34	2.73	1.12	1.46	2.58	1.40	1.17	2.57	53	50	50	49	54	50	50	50	.02	.02	63	44	52.6	91	.59				1055
16	1.22	1.43	2.65	1.40	1.35	2.75	1.13	1.46	2.59	1.41	1.24	2.65	48	49	50	49	51	50	50	50	.20	.20	76	40	59.5	72	.28				0800
17	1.20	1.41	2.61	1.39	1.30	2.69	1.11	1.42	2.53	1.40	1.15	2.55	50	50	51	50	53	53	50	50			74	40	58.8	59	.56				0750
18	1.17	1.39	2.56	1.36	1.21	2.57	1.11	1.41	2.52	1.37	1.09	2.46	53	50	50	50	54	51	50	50			66	32	51.4	69	1.13				0945
19	1.15	1.35	2.50	1.35	1.15	2.50	1.09	1.38	2.47	1.37	1.05	2.42	49	49	50	50	50	50	49	50			61	40	50.0	78	.33				0825
20	1.15	1.37	2.52	1.36	1.19	2.55	1.11	1.39	2.50	1.36	1.06	2.42	46	48	49	48	49	50	49	49	.13	.13	62	41	49.2	81	.65				0648
21	1.15	1.36	2.51	1.34	1.17	2.51	1.09	1.38	2.47	1.35	1.02	2.37	52	47	48	47	51	49	47	49	T	T	70	37	53.4	72	.57				1000
22	1.15	1.32	2.47	1.33	1.09	2.42	1.08	1.36	2.44	1.32	.97	2.29	48	49	50	49	51	50	50	50			71	39	54.0	71	.73				0830
23	1.13	1.29	2.42	1.31	1.06	2.37	1.07	1.34	2.41	1.31	.96	2.27	45	48	50	49	50	50	50	50			60	32	46.4	82	.90				0800
24	1.15	1.31	2.46	1.30	1.09	2.39	1.08	1.35	2.43	1.32	.94	2.26	46	46	49	47	48	49	48	50	.16	.16	60	41	50.4	83	.56				0800
25	1.13	1.26	2.39	1.31	1.07	2.38	1.07	1.32	2.39	1.31	.95	2.26	48	48	48	47	49	49	48	48	.01	.01	64	44	51.1	89	.29				0755
26	1.15	1.31	2.46	1.32	1.09	2.41	1.08	1.35	2.43	1.31	.95	2.26	47	47	48	47	49	49	47	49	.13	.13	70	43	52.8	85	.39				0800
27	1.17	1.35	2.52	1.34	1.17	2.51	1.10	1.39	2.49	1.34	1.00	2.34	46	48	49	47	49	50	49	49	.24	.24	66	41	53.3	81	.40				0648
28	1.14	1.35	2.49	1.33	1.12	2.45	1.08	1.35	2.43	1.32	.97	2.29	58	51	49	48	57	52	49	49	T	T	73	42	56.0	84	.53				1330
29	1.19	1.38	2.57	1.35	1.25	2.60	1.11	1.45	2.56	1.36	1.07	2.43	52	50	50	48	52	51	49	50	.31	.31	75	50	59.4	77	.10				0820
30	1.17	1.35	2.52	1.34	1.18	2.52	1.10	1.40	2.50	1.36	1.05	2.41	50	50	51	49	53	52	50	50			69	44	56.6	78	.51				0810
31																															
SUMS 1-10																					.94	.94									
SUMS 11-20																					1.01	1.01									
SUMS 21-31																					.85	.85									
SUMS Month																					2.80	2.80									
MEANS 1-10	1.20	1.39	2.58	1.37	1.26	2.63	1.12	1.42	2.54	1.37	1.12	2.49	48.6	47.7	48.2	46.4	50.6	49.8	48.2	48.6			65.8	42.7	54.6	76.7	.39				
MEANS 11-20	1.18	1.39	2.58	1.38	1.26	2.64	1.12	1.42	2.54	1.39	1.15	2.53	50.2	49.7	50.1	48.9	52.0	51.1	49.8	49.8			68.6	41.9	55.3	75.5	.54				
MEANS 21-31	1.15	1.33	2.48	1.33	1.13	2.46	1.09	1.37	2.46	1.33	.99	2.32	49.2	48.4	49.2	47.6	50.9	50.1	48.7	49.4			67.8	41.3	53.3	80.2	.50				
MEANS Month	1.18	1.37	2.55	1.36	1.22	2.58	1.11	1.40	2.51	1.36	1.09	2.45	49.3	48.6	49.2	47.7	51.2	50.3	48.9	49.3			67.4	42.0	54.4	77.5	.48				

Agriculture — Missouri

Table 15. Soil moisture and temperature and related factors.

BURN JULY 1953

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE BURN MONTH JULY 1953

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3 (Inches)	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2 (Degrees F)	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1 (Inches)	TIER 2	AIR TEMPERATURE MAXIMUM (Degrees F)	MINIMUM	MEAN	RELATIVE HUMIDITY (Percent)	WIND VELOCITY (mph)				TIME (Hours)
1	1.17	1.37	2.54	1.36	1.15	2.51	1.10	1.42	2.52	1.36	1.05	2.41	50	50	50	50	52	52	50	50	.09	.09	75	45	57.7	75	.61				0800
2	1.15	1.31	2.46	1.33	1.13	2.46	1.09	1.39	2.48	1.34	.99	2.33	48	51	51	50	51	52	50	51			82	40	62.5	68	.67				0740
3	1.13	1.32	2.45	1.32	1.06	2.38	1.07	1.34	2.41	1.30	.94	2.24	51	52	52	50	54	54	53	53			78	44	60.9	64	.77				0850
4	1.11	1.25	2.36	1.29	1.00	2.29	1.06	1.29	2.35	1.29	.90	2.19	50	52	52	50	53	55	52	52			77	40	58.5	68	.80				0640
5	1.07	1.17	2.24	1.27	.95	2.22	1.04	1.26	2.30	1.26	.85	2.11	58	52	51	50	58	53	50	51			84	35	60.5	64	.59				1220
6	1.07	1.16	2.23	1.25	.93	2.18	1.03	1.21	2.24	1.26	.83	2.09	50	50	52	50	54	54	52	53			89	41	65.7	66	.48				0800
7	1.06	1.12	2.18	1.23	.85	2.08	1.01	1.19	2.20	1.20	.78	1.98	52	53	54	52	56	55	54	54			92	45	69.2	65	.45				0745
8	1.04	1.05	2.09	1.21	.85	2.06	.99	1.14	2.13	1.18	.77	1.95	54	54	54	52	58	58	55	54			86	47	66.1	68	.61				0805
9	1.02	1.02	2.04	1.18	.79	1.97	.98	1.11	2.09	1.16	.74	1.90	50	52	53	52	55	56	54	55			89	41	66.6	63	.66				0740
10	.99	.97	1.96	1.15	.77	1.92	.96	1.08	2.04	1.11	.69	1.80	54	54	54	52	57	56	56	56			93	47	70.3	64	.68				0755
11	- - - -	NO RECORD	- - - -				- - - -	NO RECORD	- - - -				-	NO RECORD	-		- -	NO RECORD	- - -				96	48	72.0	64	-				
12	- - - -	NO RECORD	- - - -				- - - -	NO RECORD	- - - -				-	NO RECORD	-		- -	NO RECORD	- - -				97	49	73.7	66	-				
13	.90	.87	1.77	1.04	.68	1.72	.90	.97	1.87	1.02	.64	1.66	59	58	57	54	61	61	58	57			89	54	71.3	68	-				0740
14	.88	.83	1.71	1.01	1.65	1.66	.87	.93	1.80	.98	.65	1.63	60	58	57	55	62	61	58	58			76	48	63.1	82	.60				0815
15	.86	.83	1.69	.98	.64	1.62	.87	.93	1.80	.98	.64	1.62	59	56	56	55	59	58	56	57	1.19A	1.19A									1025
16	1.03	.98	2.01	1.13	.75	1.88	1.02	1.07	2.09	1.10	.71	1.81	59	55	57	55	58	57	56	57	.87A	1.98A									1030
17	1.07	1.05	2.12	1.18	.81	1.99	1.14	1.31	2.45	1.27	.90	2.17	58	56	57	56	59	58	56	57	1.59A	1.11A									1030
18	1.16	1.23	2.39	1.28	.99	2.27	1.14	1.34	2.48	1.31	.92	2.23	59	59	59	56	61	62	58	58											0610
19	1.08	1.05	2.13	1.20	.82	2.02	1.07	1.22	2.29	1.21	.79	2.00	54	59	59	57	59	61	58	58											0505
20	1.02	.98	2.00	1.15	.75	1.90	1.03	1.12	2.15	1.12	.72	1.84	55	57	59	57	58	58	58	58											0810
21	.97	.92	1.89	1.10	.70	1.80	.97	1.02	1.99	1.06	.65	1.71	54	54	57	55	58	58	56	58											0835
22																															
23																															
24																															
25																															
26																															
27																															
28																															
29																															
30																															
31																															
SUMS 1-10																					.09	.09									
SUMS 11-20																					3.65A	4.28A									
SUMS 21-31																					-	-									
SUMS Month																					.09 3.65A	.09 4.28A									
MEANS 1-10	1.08	1.17	2.26	1.26	.95	2.21	1.03	1.24	2.28	1.25	.85	2.10	51.7	52.0	52.3	50.8	54.8	54.5	52.6	52.9			84.5	42.5	63.8	66.5	.63				
MEANS 11-20	1.00	.98	1.98	1.12	.76	1.88	1.00	1.11	2.12	1.12	.75	1.87	57.9	57.2	57.6	55.6	59.6	59.5	57.2	57.5			89.5	49.8	70.0	70.0	-				
MEANS 21-31	--	--	--	--	--	--	--	--	--	--	--	--	-	-	-	-	-	-	-	-			-	-	-	-	-				
MEANS Month	1.05	1.09	2.14	1.20	.87	2.07	1.02	1.18	2.21	1.19	.80	2.00	54.5	54.4	54.7	53.0	57.0	56.8	54.7	55.0			85.9	44.6	65.5	67.5	-				

Table 16. Soil moisture and temperature and related factors.

TIMBER JULY 1952

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE TIMBER MONTH JULY 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1																															
2																															
3																															
4																															
5																															
6																															
7	1.06	.79	1.85	.91	.76	1.67	1.12	1.03	2.15	1.13	--	--	48	46	46	43	58	51	48	45											1405
8	1.05	.79	1.84	.91	.78	1.69	1.15	1.08	2.23	1.16	--	--	47	47	46	43	49	46	45	45							.01				0915
9	1.00	.76	1.76	.89	.74	1.63	1.16	1.10	2.26	1.13	--	--	53	50	47	44	65	51	48	50							.02				1400
10	.96	.77	1.73	.89	.74	1.63	1.10	1.04	2.14	1.10	--	--	50	50	48	45	55	53	51	47							.01				0920
11	.97	.74	1.71	.87	.73	1.60	1.14	1.13	2.27	1.10	--	--	51	51	49	46	50	46	47	45							.01				0825
12	.91	.77	1.68	.87	.73	1.60	1.16	1.14	2.30	1.10	--	--	54	53	50	48	58	54	51	49							.06				1200
13	.90	.72	1.62	.86	.73	1.59	1.13	1.01	2.14	1.09	--	--	50	51	50	46	51	51	50	51							.02				1015
14	.85	.76	1.61	.81	.72	1.53	1.00	.96	1.96	1.05	--	--	50	50	48	45	61	55	51	49							.02				1610
15	.84	.77	1.61	.81	.70	1.51	.96	.95	1.91	1.03	--	--	48	45	47	46	62	55	50	49							.03				1445
16	.79	.74	1.53	.80	.69	1.49	.96	.95	1.91	1.01	--	--	--	--	--	--	51	50	50	49			76	42	59.9	63					0945
17	.75	.71	1.46	.78	.69	1.47	.97	.92	1.89	1.00	--	--	49	48	48	44	49	51	49	50			66	46	55.5	76	.03				1010
18	.70	.68	1.38	.76	.67	1.43	.99	.91	1.90	.97	1.38	2.35	51	50	48	46	58	51	49	48			73	42	57.8	72	.01				1525
19	.69	.67	1.36	.75	.66	1.41	.91	.88	1.79	.97	1.27	2.24	51	50	48	45	58	52	49	48	.06	.08	70	52	60.0	86	.00				1450
20	.67	.66	1.33	.75	.65	1.40	.97	.91	1.88	.97	1.21	2.18	51	50	48	46	55	50	47	48			71	48	57.9	79	.02				1321
21	.65	.66	1.31	.75	.65	1.40	.97	.89	1.86	.94	1.13	2.07	48	48	46	45	48	48	48	48			68	45	55.7	73	.02				1000
22	.61	.64	1.25	.71	.64	1.35	.91	.89	1.80	.93	.99	1.92	50	48	47	45	54	51	48	48			71	40	57.4	76	.03				1850
23	.58	.63	1.21	.68	.64	1.32	.89	.87	1.76	.91	.97	1.88	51	48	47	44	59	53	48	47			80	48	65.1	67	.02				1525
24	.58	.62	1.20	.68	.63	1.31	.91	.85	1.76	.90	.93	1.83	50	49	48	45	50	51	49	48			67	49	59.1	76	.01				0830
25	.57	.59	1.16	.66	.61	1.27	.86	.84	1.70	.87	.87	1.74	50	49	46	45	59	52	49	48			77	43	60.7	70	.03				1530
26	.57	.59	1.16	.65	.61	1.26	.88	.83	1.71	.87	.86	1.73	48	48	47	45	48	48	48	47			85	46	64.6	64	.01				0900
27	.55	.58	1.13	.64	.59	1.23	.84	.87	1.71	.85	.81	1.66	47	49	47	46	49	50	49	49			81	45	64.0	69	.05				0845
28	.52	.56	1.08	.60	.58	1.18	.82	.84	1.66	.82	.77	1.59	50	50	49	46	54	53	52	50			85	48	66.8	69	.02				1020
29	.50	.54	1.04	.59	.56	1.15	.83	.83	1.66	.82	.77	1.59	51	53	50	48	46	52	51	49			87	49	67.7	69	.02				0835
30	.47	.53	1.00	.58	.55	1.13	.80	.82	1.62	.81	.74	1.55	52	51	50	47	55	52	50	49			90	50	68.4	64	.02				1110
31	.47	.52	.99	.57	.54	1.11	.76	.79	1.55	.78	.72	1.50	50	52	50	47	56	52	51	50			48	89	67.3	71	.01				0845
SUMS 1-10																					.00	.00									
SUMS 11-20																					.06	.08									
SUMS 21-31																					.00	.00									
SUMS Month																					.06	.08									
MEANS 1-10	1.02	.78	1.80	.90	.76	1.66	1.13	1.06	2.20	1.13	--	--	49.5	48.2	46.8	43.8	56.8	50.2	48.0	46.8			--	--	--	--	.01				
MEANS 11-20	.81	.72	1.53	.81	.70	1.50	1.02	.98	2.00	.97	1.29	2.26	50.6	49.8	48.4	45.8	55.3	51.5	49.3	48.6			71.2	46.0	58.2	75.2	.02				
MEANS 21-31	.55	.59	1.14	.65	.60	1.25	.86	.85	1.71	.86	.87	1.73	49.7	49.5	47.9	45.7	52.5	51.1	49.4	48.4			76.3	50.2	63.3	69.8	.02				
MEANS Month	.75	.67	1.40	.75	.66	1.41	.97	.93	1.90	.89	.96	1.85	50.0	49.4	47.9	45.4	54.3	51.1	49.1	48.2			74.6	48.9	67.7	71.5	.02				

Table 17. Soil moisture and temperature and related factors.

TIMBER AUGUST 1952

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE TIMBER MONTH AUGUST 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.42	.49	.91	.54	.51	1.05	.71	.76	1.47	.76	.69	1.45	56	54	50	48	64	59	54	50			84	53	67.5	69	.03				1545
2	.41	.49	.90	.54	.51	1.05	.73	.76	1.49	.76	.69	1.45	50	51	50	48	50	51	50	50			85	47	65.4	64	.01				0755
3	.40	.47	.87	.52	.49	1.01	.69	.72	1.41	.72	.65	1.37	54	52	50	48	63	54	50	50			86	48	67.4	69	.01				1350
4	.41	.47	.88	.52	.49	1.01	.69	.71	1.40	.71	.64	1.35	50	50	49	47	54	54	53	51	4.19A		88	51	68.3	72	.01				0955
5	.46	.79	1.25	1.15	1.04	2.19	.65	.70	1.35	.69	.63	1.32	59	58	57	53	67	58	54	52			89	55	69.6	59	.03				1400
6	.44	.77	1.21	1.02	.93	1.95	.61	.69	1.30	.69	.60	1.29	57	55	54	51	65	54	52	51			77	49	63.1	56	.04				1025
7	.45	.73	1.18	1.02	.88	1.90	.59	.65	1.24	.64	.60	1.24	54	54	53	50	59	54	50	50			75	48	62.7	66	.02				1500
8	.45	.73	1.18	.98	.83	1.81	.59	.63	1.22	.63	.59	1.22	55	54	52	50	61	55	51	50			82	56	68.5	58	.02				1510
9	.46	.72	1.18	.94	.79	1.73	.59	.61	1.20	.63	.57	1.20	54	54	53	50	54	54	53	51			86	51	67.8	64	.01				0940
10	.47	.71	1.18	.89	.74	1.63	.74	.67	1.41	.64	.57	1.21	54	54	54	50	57	47	50	50	.16	.20	67	53	60.6	86	.01				0945
11	.49	.68	1.17	.86	.70	1.56	.83	.69	1.52	.65	.57	1.22	53	53	52	50	55	53	52	51			79	47	62.1	66	.00				1155
12	.49	.67	1.16	.85	.67	1.52	.78	.67	1.45	.64	.56	1.20	51	53	51	50	54	53	53	52			84	49	65.1	62	.01				0920
13	.47	.63	1.10	.79	.63	1.42	.71	.64	1.35	.63	.55	1.18	54	53	52	49	57	53	51	50			86	51	66.5	56	.02				1145
14	.49	.63	1.12	.79	.60	1.39	.67	.62	1.29	.63	.54	1.17	52	52	51	49	54	53	52	51			80	48	62.8	55	.05				1030
15	.46	.60	1.06	.75	.56	1.31	.62	.60	1.22	.60	.53	1.13	51	51	51	49	54	51	50	50			72	47	59.1	62	.04				1115
16	.45	.58	1.03	.71	.54	1.25	.60	.58	1.18	.59	.51	1.10	50	50	50	48	51	50	49	50			71	41	56.2	62	.05				1130
17	.44	.56	1.00	.64	.51	1.15	.58	.56	1.14	.57	.49	1.06	50	50	50	48	50	48	49	49			78	41	59.0	58	.02				1055
18	.42	.55	.97	.63	.49	1.12	.56	.55	1.11	.56	.49	1.05	49	49	49	48	51	49	48	48			74	44	58.0	61	.02				1130
19	.42	.54	.96	.60	.48	1.08	.54	.54	1.08	.55	.48	1.03	48	49	50	48	50	50	50	50			71	40	55.2	64	.03				1040
20	.41	.52	.93	.58	.47	1.05	.54	.54	1.08	.55	.48	1.03	46	48	48	46	49	48	49	49			75	41	57.2	62	.02				0950
21	.39	.50	.89	.55	.44	.99	.52	.52	1.04	.52	.46	.98	50	49	49	47	55	51	48	48			79	41	59.3	59	.01				1410
22	.39	.48	.87	.54	.44	.98	.52	.52	1.04	.53	.46	.99	48	50	50	48	49	48	48	48			78	44	61.5	60	.01				1000
23	.37	.48	.85	.53	.43	.96	.50	.50	1.00	.51	.46	.97	49	46	46	45	52	50	48	48			75	44	59.6	58	.06				1215
24	.36	.45	.81	.49	.41	.90	.50	.49	.99	.51	.44	.95	50	49	48	47	54	51	48	48			74	42	57.4	69	.02				1600
25	.37	.45	.82	.50	.41	.91	.50	.50	1.00	.51	.44	.95	48	49	49	47	49	50	49	49	.01	.01	66	41	54.0	69	.01				0835
26	.37	.43	.80	.47	.40	.87	.49	.48	.97	.49	.43	.92	46	47	47	45	50	49	47	48			69	37	51.5	69	.02				1515
27	.36	.43	.79	.47	.39	.86	.49	.49	.98	.49	.43	.92	49	49	49	48	44	45	46	47	5.57A		72	38	53.4	67	.01				0950
28	1.14	1.23	2.37	1.25	1.19	2.44	.48	.48	.96	.49	.43	.92	58	59	58	55	53	49	48	48	2.80A		72	37	55.6	61	.01				1515
29	1.21	1.58	2.79	1.34	1.44	2.78	.48	.48	.96	.49	.43	.92	57	59	59	54	49	47	47	47			66	40	55.6	54	.02				1025
30	1.13	1.45	2.58	1.24	1.11	2.35	.48	.48	.96	.49	.43	.92	53	54	54	54	51	49	48	48			64	35	50.0	63	.07				1530
31	1.09	1.35	2.44	1.17	1.02	2.19	.48	.47	.95	.49	.39	.88	51	54	54	53	48	48	48	48			70	44	54.6	60	.00				1000
SUMS 1-10																					.16 4.19A	.20									
SUMS 11-20																					.00	.00									
SUMS 21-31																					.01 8.37A	.01									
SUMS Month																					.17 12.56A	.21									
MEANS 1-10	.44	.64	1.07	.81	.72	1.53	.66	.69	1.35	.69	.62	1.31	54.3	53.6	52.2	49.5	59.4	54.0	51.7	50.5			81.9	51.1	67.3	66.3	.02				
MEANS 11-20	.45	.60	1.05	.72	.56	1.28	.64	.60	1.24	.60	.52	1.12	50.4	50.8	50.4	48.5	52.5	50.8	50.3	50.0			77.0	44.9	60.1	60.8	.03				
MEANS 21-31	.65	.80	1.46	.78	.70	1.48	.49	.49	.99	.50	.44	.94	50.8	51.4	51.2	49.4	50.4	48.8	47.7	47.9			71.4	40.3	55.5	62.7	.02				
MEANS Month	.52	.68	1.20	.77	.66	1.43	.60	.59	1.18	.59	.52	1.12	51.8	51.9	51.2	49.1	54.0	51.1	49.8	49.4			76.6	45.2	60.8	63.2	.02				

Table 18. Soil moisture and temperature and related factors.

T I M B E R S E P T E M B E R 1 9 5 2

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE TIMBER MONTH SEPTEMBER 195 2

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.98	1.12	2.10	1.10	.89	1.99	.47	.47	.94	.47	.42	.89	48	49	50	50	48	47	46	47			73	38	55.5	64	.02				1145
2	.97	1.01	1.98	1.05	.88	1.93	.47	.47	.94	.46	.42	.88	47	50	50	49	46	46	46	47			78	40	59.4	64	.01				1020
3	.89	.94	1.83	1.06	.84	1.90	.46	.46	.92	.46	.42	.88	50	50	50	48	48	48	47	46			74	49	59.3	66	.01				0905
4	.87	.88	1.75	1.01	.79	1.80	.47	.46	.93	.47	.41	.88	49	51	51	49	46	48	49	49			75	38	55.5	55	.00				0815
5	.81	.80	1.61	.98	.74	1.72	.46	.47	.93	.46	.41	.87	48	50	50	48	46	48	48	48			67	42	53.2	64	.01				0825
6	.75	.76	1.51	.91	.68	1.59	.45	.46	.91	.46	.39	.85	49	50	50	48	50	48	47	48			67	46	55.8	82	.01				1040
7	.75	.74	1.49	.91	.65	1.56	.46	.47	.93	.47	.40	.87	48	50	50	49	46	48	48	49	.01	T	60	38	48.5	69	.01				0820
8	.68	.72	1.40	.87	.61	1.48	.45	.45	.90	.46	.39	.85	46	48	48	48	48	46	46	48	.01	T	56	36	45.4	89	.01				1335
9	.67	.73	1.40	.86	.58	1.44	.96	.64	1.60	.46	.39	.85	48	48	48	47	48	48	48	48	.30	.36	53	47	50.1	98	.00				1405
10	.70	.74	1.44	.86	.57	1.43	.91	.67	1.58	.49	.41	.90	49	47	49	47	54	50	48	48	T	T	65	47	53.9	82	.00				1355
11	.68	.72	1.40	.82	.55	1.37	.86	.65	1.51	.50	.40	.90	46	46	46	44	50	47	45	45	4.19A		70	40	52.5	76	.00				1415
12	1.27	1.53	2.80	1.31	1.24	2.55	.85	.65	1.50	.52	.41	.93	54	54	54	52	49	49	48	49	.03	.04	58	35	48.7	78	.00				0920
13	1.22	1.37	2.59	1.20	1.01	2.21	.89	.69	1.58	.53	.41	.94	45	48	49	48	42	42	43	45	.02	.03	61	30	44.5	69	.04				1200
14	1.19	1.17	2.36	1.15	.95	2.10	.85	.69	1.54	.55	.43	.98	44	48	48	48	43	43	44	44			66	32	47.5	69	.00				1120
15	1.14	1.04	2.18	1.09	.88	1.97	.81	.67	1.48	.55	.42	.97	45	48	48	48	42	43	44	46			73	34	51.0	68	.00				0935
16	1.09	1.00	2.09	1.07	.85	1.92	.78	.65	1.43	.54	.42	.96	46	48	49	47	42	44	46	46							.01				0810
17	1.02	.91	1.93	1.03	.80	1.83	.74	.63	1.37	.54	.42	.96	46	48	48	47	45	47	47	47							.01				0835
18	.96	.86	1.82	1.00	.74	1.74	.71	.61	1.32	.53	.43	.96	49	48	50	48	48	50	50	46			79	44	59.8	67	.00				0805
19	.91	.82	1.73	.94	.69	1.63	.67	.57	1.24	.52	.42	.94	52	51	50	48	55	52	50	49			77	43	58.7	63	.01				1505
20	.87	.78	1.65	.93	.65	1.58	.65	.57	1.22	.53	.42	.95	46	50	50	49	50	51	50	50			75	43	58.0	55	.00				1035
21	.78	.73	1.51	.89	.61	1.50	.62	.56	1.18	.51	.41	.92	49	50	50	48	50	49	49	49			75	45	58.0	54	.04				1120
22	.72	.72	1.44	.83	.56	1.39	.59	.54	1.13	.51	.41	.92	48	48	48	47	50	47	46	47			77	38	54.8	67	.00				1525
23	.70	.71	1.41	.83	.54	1.37	.58	.53	1.11	.50	.40	.90	47	49	49	47	45	48	48	49			78	38	55.3	66	.00				0900
24	.65	.68	1.33	.77	.51	1.28	.56	.52	1.08	.49	.40	.89	49	49	48	47	54	50	48	48			79	39	56.5	63	.00				1420
25	.61	.66	1.27	.73	.49	1.22	.53	.52	1.07	.49	.39	.88	48	48	48	46	50	47	47	47			80	40	57.8	61	.00				1145
26	.58	.64	1.22	.69	.48	1.17	.54	.51	1.05	.49	.39	.88	48	49	48	47	50	48	48	48			80	46	63.6	50	.00				1110
27	.56	.62	1.18	.63	.47	1.10	.53	.50	1.03	.48	.39	.87	50	51	50	49	50	51	50	50			68	42	54.1	58	.03				1035
28	.53	.60	1.13	.60	.46	1.06	.52	.49	1.01	.48	.39	.87	48	49	49	48	46	48	48	49			69	40	52.9	66	.02				1020
29	.50	.59	1.09	.56	.45	1.01	.52	.49	1.01	.47	.39	.86	45	47	48	46	44	45	46	46			71	39	55.5	68	.02				1015
30	.47	.56	1.03	.53	.43	.96	.50	.48	.98	.47	.38	.85	48	48	48	46	50	48	46	46			70	33	51.7	70	.01				1750
31																															
SUMS 1-10																					.32	.36									
SUMS 11-20																					4.19A .07										
SUMS 21-31																					.00	.00									
SUMS Month																					4.19A .43										
MEANS 1-10	.81	.84	1.65	.96	.72	1.68	.56	.50	1.06	.47	.41	.87	48.2	49.3	49.6	48.3	48.0	47.7	47.3	47.8			66.8	42.1	53.5	73.4	.01				
MEANS 11-20	1.04	1.02	2.06	1.05	.84	1.89	.78	.64	1.42	.53	.42	.95	47.3	48.9	49.2	47.9	46.6	46.8	46.7	46.7			69.9	37.6	52.5	68.0	.01				
MEANS 21-31	.61	.65	1.26	.71	.50	1.21	.55	.51	1.06	.49	.40	.89	48.0	48.8	48.6	47.1	48.9	48.1	47.6	47.9			74.7	40.5	55.8	62.4	.01				
MEANS Month	.82	.84	1.66	.91	.69	1.59	.63	.55	1.18	.50	.41	.90	47.8	49.0	49.1	47.8	47.8	47.5	47.2	47.5			70.5	40.2	54.0	67.9	.01				

Agriculture — Missouri

Table 19. Soil moisture and temperature and related factors.

T I M B E R O C T O B E R 1 9 5 2

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE TIMBER MONTH OCTOBER 195 2

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.45	.55	1.00	.52	.42	.94	.50	.47	.97	.46	.37	.83	47	47	47	46	50	48	46	47	2.10A		71	37	51.3	70	.00				1445
2	.45	.56	1.01	1.06	.75	1.81	.50	.47	.97	.47	.37	.84	47	49	50	48	43	45	46	47	2.10A		73	35	51.1	70	.00				1030
3	1.18	1.16	2.34	1.20	1.01	2.21	.50	.48	.98	.47	.37	.84	49	51	51	49	42	44	45	46			70	36	49.8	61	.02				0930
4	1.13	1.01	2.14	1.11	.91	2.02	.49	.47	.96	.47	.37	.84	43	47	48	48	39	42	43	46			67	30	46.4	55	.00				1005
5	1.07	.92	1.99	1.06	.81	1.87	.49	.47	.96	.46	.37	.83	43	47	48	48	39	42	44	46			68	31	47.1	64	.00				0945
6	1.01	.88	1.89	1.05	.76	1.81	.50	.47	.97	.46	.37	.83	42	45	46	45	37	42	43	44			70	33	48.2	71	.00				0835
7	.94	.81	1.75	1.00	.69	1.69	.48	.46	.94	.46	.37	.83	42	44	46	45	42	42	43	44			70	32	48.4	70	.00				1120
8	.90	.79	1.69	.94	.64	1.58	.47	.46	.93	.46	.37	.83	43	45	46	44	46	43	43	44			66	35	48.5	69	.00				1350
9	.85	.67	1.52	.91	.56	1.47	.48	.46	.94	.46	.37	.83	44	45	47	46	42	44	45	46			69	37	49.9	72	.00				0910
10	.81	.75	1.56	.87	.56	1.43	.48	.46	.94	.46	.37	.83	43	45	46	44	40	42	43	45			68	35	49.5	75	.00				0940
11	.74	.70	1.44	.79	.51	1.30	.46	.45	.91	.45	.34	.79	45	46	46	44	48	45	44	46			66	37	48.9	77	.00				1355
12	.70	.68	1.38	.77	.49	1.26	.45	.45	.90	.45	.35	.80	43	45	45	45	43	42	43	45			65	34	47.1	70	.01				1200
13	.68	.67	1.35	.72	.48	1.20	.45	.44	.89	.44	.35	.79	42	44	45	44	39	42	43	45			57	32	43.0	63	.04				0935
14	.63	.64	1.27	.68	.46	1.14	.46	.45	.91	.45	.36	.81	42	43	44	44	42	42	42	44			56	26	38.3	68	.00				1550
15	.62	.62	1.24	.62	.44	1.06	.45	.44	.89	.44	.35	.79	39	41	42	43	39	39	40	42			55	27	39.0	67	.00				1350
16	.58	.60	1.18	.58	.42	1.00	.45	.43	.88	.43	.35	.78	41	42	43	46	43	42	42	43			61	32	42.7	70	.01				1540
17	.56	.59	1.15	.56	.43	.99	.45	.44	.89	.43	.35	.78	41	42	42	42	42	40	41	42			60	30	42.3	78	.00				1435
18	.55	.58	1.13	.55	.42	.97	.45	.44	.89	.44	.35	.79	38	42	42	42	38	39	41	42			61	30	43.2	80	.00				1100
19	.52	.57	1.09	.54	.42	.96	.44	.43	.87	.44	.35	.79	40	42	42	42	42	41	41	42			59	33	44.0	80	.00				1245
20	.51	.57	1.08	.53	.42	.95	.46	.45	.91	.45	.35	.80	41	43	43	43	40	41	42	43	4.19A		59	33	45.3	84	.00				1105
21	1.20	1.11	2.31	1.24	1.01	2.25	.45	.44	.89	.45	.34	.79	44	44	44	43	47	43	42	43	T	T	62	39	49.5	84	.00				1520
22	1.17	1.01	2.18	1.18	.92	2.10	.46	.44	.90	.45	.34	.79	42	43	44	43	40	42	43	44			60	33	43.8	84	.00				0730
23	1.14	.91	2.05	1.09	.80	1.89	.45	.44	.89	.45	.35	.80	42	43	43	43	43	42	42	43			59	31	43.2	83	.00				1345
24	1.11	.88	1.99	1.09	.80	1.89	.46	.44	.90	.45	.34	.79	40	42	43	42	40	42	42	43	.01	.01	56	30	36.7	82	.01				0825
25	1.05	.82	1.87	1.04	.73	1.77	.46	.44	.90	.45	.35	.80	38	41	42	42	34	39	41	42			51	30	36.7	82	.01				0825
26	.99	.79	1.78	.99	.67	1.66	.45	.43	.88	.45	.34	.79	37	40	41	42	39	39	39	42			52	25	36.4	81	.00				1505
27	.93	.79	1.72	.97	.64	1.61	.45	.43	.88	.45	.34	.79	39	41	41	42	34	39	39	41			54	27	37.4	82	.00				1100
28	.93	.79	1.72	.95	.61	1.56	.45	.44	.89	.45	.34	.79	35	38	40	40	34	36	38	40			53	27	37.1	81	.00				1115
29	.88	.76	1.64	.91	.57	1.48	.45	.43	.88	.45	.34	.79	36	38	40	40	38	39	38	41			45	33	39.5	91	.00				1340
30	.88	.76	1.64	.89	.55	1.44	.49	.44	.93	.44	.34	.78	38	40	40	40	39	39	40	41	.16	.20	46	33	40.6	99	.00				0920
31	.90	.76	1.66	.89	.54	1.43	.73	.47	1.20	.45	.34	.79	39	40	40	40	37	38	39	40	T	T	41	32	36.0	98	.00				1600
SUMS 1-10																					4.20A	.00									
SUMS 11-20																					4.19A	.00									
SUMS 21-31																					.17	.21									
SUMS Month																					.17 8.39A	.21									
MEANS 1-10	.88	.81	1.69	.97	.71	1.68	.49	.47	.96	.46	.37	.83	44.3	46.6	47.5	46.3	42.0	43.4	44.1	45.5			69.2	34.1	49.0	67.6	T				
MEANS 11-20	.61	.62	1.23	.63	.45	1.08	.45	.44	.89	.44	.35	.79	41.2	43.0	43.4	43.5	41.6	41.3	41.9	43.4			59.9	31.4	45.4	73.5	.01				
MEANS 21-31	1.02	.85	1.87	1.02	.71	1.73	.48	.44	.92	.45	.34	.79	39.1	40.9	41.6	41.5	38.6	39.8	40.3	41.8			52.6	31.3	40.2	86.0	T				
MEANS Month	.84	.76	1.60	.88	.63	1.51	.47	.45	.92	.45	.35	.80	41.4	43.4	44.1	43.7	40.7	41.4	42.0	43.5			60.3	32.2	44.1	76.0	T				

Table 20. Soil moisture and temperature and related factors.

T I M B E R M A Y 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE TIMBER MONTH MAY 1953

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1																							42	34	38.6	93					
2																							49	30	39.2	82					
3																							61	30	44.5	67					
4	1.07	1.24	2.31	1.31	1.38	2.69	1.36	1.35	2.71	1.30	1.32	2.62	36	36	36	35	40	37	36	36	.09	.11	70	32	49.7	70	.06				1125
5	1.05	1.19	2.24	1.30	1.38	2.68	1.35	1.32	2.67	1.29	1.33	2.62	38	38	37	35	43	39	38	37			74	36	54.1	61	.10				1120
6	1.03	1.14	2.17	1.30	1.34	2.64	1.36	1.34	2.70	1.31	1.35	2.64	40	40	38	36	39	39	38	38			77	36	56.1	58	.12				1005
7	1.04	1.13	2.17	1.29	1.33	2.62	1.35	1.33	2.68	1.30	1.32	2.62	42	42	40	37	43	42	42	40	T	.01	49	39	44.6	90	.10				1025
8	1.05	1.14	2.19	1.29	1.34	2.63	1.34	1.32	2.66	1.30	1.32	2.62	38	40	39	36	38	39	40	39	.09	.09	43	34	38.2	94	.03				0915
9	1.03	1.11	2.14	1.29	1.31	2.60	1.34	1.33	2.67	1.31	1.33	2.64	36	37	37	36	37	37	37	38	.04	.16	46	33	37.4	90	.11				1020
10	1.07	1.13	2.20	1.30	1.33	2.63	1.36	1.34	2.70	1.38	1.33	2.66	35	36	36	36	36	36	36	37	.13	.20	51	34	39.9	84	.06				1110
11	1.08	1.10	2.18	1.30	1.31	2.61	1.36	1.35	2.71	1.31	1.33	2.64	35	36	36	36	36	35	36	36			60	31	45.8	67	.08				1050
12	1.09	1.11	2.20	1.29	1.29	2.58	1.35	1.32	2.67	1.31	1.31	2.62	36	37	37	36	36	38	37	38			64	31	48.7	60	.09				0805
13	1.07	1.05	2.12	1.28	1.29	2.57	1.34	1.32	2.66	1.30	1.31	2.61	37	39	38	36	38	39	40	39			68	33	51.7	60	.24				0850
14	1.06	1.04	2.10	1.27	1.28	2.55	1.33	1.32	2.65	1.30	1.29	2.59	40	40	39	36	43	42	40	40			68	42	52.9	66	.10				1015
15	1.04	1.02	2.06	1.27	1.24	2.51	1.33	1.32	2.65	1.29	1.32	2.61	41	41	40	37	42	42	41	40	T	T	65	42	52.7	68	.12				0745
16	1.02	.99	2.01	1.26	1.22	2.48	1.33	1.28	2.61	1.27	1.28	2.55	41	41	40	38	42	42	42	41			65	38	52.5	69	.10				0845
17	1.02	.98	2.00	1.26	1.22	2.48	1.31	1.30	2.61	1.27	1.29	2.56	41	42	40	38	43	42	42	40			68	41	54.3	67	.16				0920
18	.99	.95	1.94	1.25	1.19	2.44	1.31	1.29	2.60	1.27	1.27	2.54	42	43	41	39	43	43	42	42	T	T	67	43	53.8	76	.11				0815
19	1.00	.95	1.95	1.24	1.18	2.42	1.30	1.26	2.56	1.27	1.29	2.56	43	43	42	39	46	45	43	42	.04	.05	58	50	52.8	71	.13				0825
20	.97	.91	1.88	1.23	1.15	2.38	1.29	1.26	2.55	1.26	1.25	2.51	42	43	42	40	42	42	42	42			52	33	43.7	65	.20				0930
21	.97	.91	1.88	1.25	1.15	2.38	1.29	1.25	2.54	1.24	1.26	2.50	37	40	40	39	37	39	40	40			56	29	40.4	80	.18				0930
22	.96	.90	1.86	1.21	1.13	2.34	1.27	1.25	2.52	1.23	1.22	2.45	38	40	40	37	40	39	40	40	.10	.10	49	34	41.7	76	.20				1000
23	.96	.92	1.88	1.22	1.12	2.34	1.27	1.23	2.50	1.24	1.24	2.48	36	38	39	38	36	38	39	39	.01	.01	60	29	46.1	66	.15				0905
24	.96	.89	1.85	1.21	1.12	2.33	1.29	1.23	2.52	1.23	1.24	2.48	40	41	40	38	42	42	41	40	.10	.15	49	40	44.7	94	.21				0830
25	.96	.90	1.86	1.22	1.12	2.34	1.28	1.23	2.51	1.24	1.22	2.46	40	40	40	38	41	41	40	40			52	42	47.2	86	.00				0825
26	.96	.89	1.85	1.22	1.12	2.34	1.28	1.23	2.51	1.24	1.22	2.46	40	41	40	38	41	41	40	40	T	T	55	41	47.0	89	.21				0820
27	1.42	1.19	2.61	1.29	1.11	2.40	1.38	1.33	2.71	1.33	1.32	2.65	40	41	40	38	40	41	40	40	.77	.83	53	40	46.4	89	.11				0730
28	1.34	1.15	2.49	1.31	1.32	2.63	1.35	1.34	2.69	1.32	1.34	2.66	40	41	40	38	42	40	40	40	.03	.03	68	39	52.8	66	.03				0955
29	1.30	1.13	2.43	1.30	1.30	2.60	1.36	1.34	2.70	1.32	1.34	2.66	43	43	42	40	44	44	43	42			66	44	55.7	77	.15				0820
30	1.27	1.13	2.40	1.29	1.30	2.59	1.35	1.32	2.67	1.32	1.34	2.66	43	43	42	40	44	45	43	42	.03	.06	52	36	46.0	72	.13				0945
31	1.24	1.05	2.29	1.28	1.26	2.54	1.35	1.33	2.68	1.31	1.34	2.65	40	42	42	40	40	41	42	42			66	34	52.0	70	.07				0915
SUMS 1-10																					.35	.57									
SUMS 11-20																					.04	.05									
SUMS 21-31																					1.04	1.18									
SUMS Month																					1.43	1.80									
MEANS 1-10	1.05	1.16	2.20	1.30	1.35	2.65	1.35	1.33	2.69	1.31	1.33	2.63	37.9	38.5	37.6	35.9	39.5	38.5	38.2	37.9			56.2	33.8	44.2	78.9	.08				
MEANS 11-20	1.03	1.01	2.04	1.26	1.24	2.50	1.32	1.30	2.63	1.28	1.29	2.58	39.8	40.5	39.5	37.5	41.1	41.0	40.5	40.0			63.5	38.4	50.9	66.9	.13				
MEANS 21-31	1.12	1.01	2.13	1.25	1.19	2.44	1.32	1.28	2.60	1.28	1.28	2.56	39.7	40.9	40.4	38.5	40.6	41.0	40.7	40.4			56.9	37.1	47.0	78.6	.13				
MEANS Month	1.07	1.04	2.12	1.27	1.24	2.51	1.33	1.30	2.63	1.29	1.30	2.58	39.3	40.1	39.4	37.5	40.5	40.3	40.0	39.6			58.8	36.4	47.4	74.9	.12				

Table 21. Soil moisture and temperature and related factors.

T I M B E R J U N E 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE TIMBER MONTH JUNE 1953

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	(Hours)
1	1.24	1.05	2.29	1.28	1.26	2.54	1.34	1.34	2.68	1.32	1.36	2.68	44	43	43	40	47	44	43	42	.10	.11	68	50	57.6	76	.13	0920
2	1.22	1.03	2.25	1.28	1.21	2.52	1.33	1.31	2.64	1.32	1.36	2.68	46	46	43	41	48	47	45	43	.03	.05	62	44	54.8	82	.05	0750
3	1.18	.99	2.17	1.26	1.23	2.49	1.33	1.31	2.64	1.30	1.33	2.63	43	43	43	40	43	44	43	43	T	T	56	41	49.5	74	.09	0755
4	1.15	.95	2.10	1.24	1.20	2.44	1.33	1.32	2.65	1.31	1.34	2.65	43	43	42	40	44	43	43	42	.21	.30	55	47	50.5	96	.03	0855
5	1.29	1.01	2.30	1.28	1.24	2.52	1.34	1.31	2.65	1.34	1.36	2.70	43	43	43	41	46	46	45	43	.07	.08	60	46	53.1	81	.02	0825
6	1.27	.99	2.26	1.27	1.25	2.50	1.33	1.32	2.65	1.33	1.35	2.68	44	44	43	41	46	45	43	43	T	.02	63	46	54.0	75	.04	0820
7	1.23	.99	2.22	1.26	1.22	2.48	1.33	1.31	2.64	1.31	1.36	2.67	43	45	43	40	45	45	45	43			50	47	48.9	97	.06	0900
8	1.33	1.04	2.37	1.28	1.28	2.56	1.36	1.35	2.71	1.35	1.35	2.70	42	43	42	40	43	43	43	43	.31	.31	55	45	49.1	80	.01	0835
9	1.32	1.04	2.36	1.28	1.26	2.54	1.34	1.34	2.68	1.32	1.36	2.68	41	43	42	40	43	43	43	43	T	T	64	40	52.5	71	.08	0940
10	1.28	.99	2.27	1.26	1.24	2.50	1.33	1.34	2.67	1.32	1.35	2.67	42	43	43	40	43	43	43	43			72	38	56.5	64	.12	0905
11	1.26	.98	2.24	1.26	1.22	2.48	1.33	1.31	2.64	1.32	1.36	2.68	44	45	43	41	48	47	45	43			76	48	62.3	62	.12	0835
12	1.23	.96	2.19	1.25	1.21	2.46	1.33	1.34	2.67	1.31	1.37	2.68	48	48	45	42	49	48	47	45			74	49	60.8	75	.04	0750
13	1.33	1.00	2.33	1.27	1.25	2.52	1.35	1.34	2.69	1.34	1.38	2.72	48	48	46	43	48	49	48	46	.58	.55	50	46	47.6	99	.09	0725
14	1.33	1.04	2.37	1.29	1.31	2.60	1.35	1.34	2.69	1.35	1.36	2.71	43	44	43	41	43	45	44	44	.01	.02	61	44	52.9	80	.00	0800
15	1.30	1.02	2.32	1.28	1.28	2.56	1.33	1.35	2.68	1.34	1.37	2.71	45	45	45	42	48	47	46	45	.01	.02	58	47	51.6	93	.05	1115
16	1.33	1.07	2.40	1.29	1.33	2.62	1.35	1.34	2.69	1.34	1.39	2.73	43	45	45	42	45	45	45	44	.20	.17	69	43	56.6	71	.01	0830
17	1.30	1.05	2.35	1.29	1.32	2.61	1.34	1.36	2.70	1.34	1.38	2.72	46	46	45	42	47	47	46	46			67	44	55.7	55	.05	0815
18	1.24	.99	2.23	1.27	1.27	2.54	1.33	1.38	2.66	1.33	1.39	2.72	44	46	45	42	46	46	46	45			59	39	50.5	65	.32	1040
19	1.23	.98	2.21	1.26	1.23	2.49	1.32	1.32	2.64	1.32	1.35	2.67	43	45	44	42	44	45	45	45			56	42	48.2	81	.05	0850
20	1.20	.96	2.16	1.25	1.22	2.47	1.33	1.32	2.65	1.33	1.36	2.69	43	43	43	41	43	44	43	43	.09	.15	56	43	47.7	83	.21	0700
21	1.19	.95	2.14	1.23	1.21	2.44	1.31	1.32	2.63	1.31	1.35	2.66	43	43	43	41	44	43	43	43	T	T	62	40	51.4	72	.08	1015
22	1.18	.93	2.11	1.23	1.15	2.38	1.30	1.29	2.59	1.30	1.33	2.63	43	43	43	41	43	44	43	43			64	42	52.5	67	.20	0850
23	1.16	.92	2.08	1.23	1.13	2.36	1.30	1.32	2.62	1.30	1.33	2.63	42	42	42	42	42	42	43	43			57	38	45.2	85	.31	0820
24	1.16	.89	2.05	1.20	1.13	2.33	1.28	1.28	2.56	1.30	1.33	2.63	41	42	42	42	42	42	42	42	.07	.11	56	42	48.2	90	.17	0815
25	1.14	.88	2.02	1.20	1.12	2.32	1.29	1.29	2.58	1.29	1.29	2.58	43	43	43	40	43	43	43	43	T	.01	55	45	49.6	93	.02	0835
26	1.16	.90	2.06	1.20	1.13	2.33	1.29	1.31	2.60	1.30	1.31	2.61	42	43	42	41	43	43	43	43	.04	.10	63	43	49.7	94	.08	0830
27	1.14	.90	2.04	1.21	1.11	2.32	1.32	1.32	2.64	1.33	1.35	2.68	43	43	43	41	43	44	43	43	.15	.24	60	42	51.4	84	.11	0705
28	1.14	.87	2.01	1.20	1.11	2.31	1.29	1.31	2.60	1.32	1.35	2.67	45	44	43	41	52	47	43	43	T	T	66	44	53.7	85	.12	1347
29	1.18	.91	2.09	1.25	1.16	2.39	1.33	1.35	2.68	1.34	1.35	2.69	45	45	43	41	48	46	45	44	.27	.29	66	50	56.7	81	.01	0845
30	1.21	.88	2.09	1.22	1.15	2.37	1.33	1.33	2.66	1.34	1.34	2.68	46	46	45	42	48	47	46	46	T	T	64	46	54.5	82	.12	0845
31																												
SUMS 1-10																					.72	.87						
SUMS 11-20																					.89	.89						
SUMS 21-31																					.53	.75						
SUMS Month																					2.14	2.51						
MEANS 1-10	1.25	1.01	2.26	1.27	1.24	2.51	1.34	1.32	2.66	1.32	1.35	2.67	43.1	43.4	42.7	40.3	44.8	44.3	43.2	42.8			60.5	44.4	52.6	79.7	.96	
MEANS 11-20	1.28	1.01	2.28	1.27	1.26	2.54	1.34	1.34	2.67	1.33	1.37	2.70	44.7	45.5	44.2	41.8	46.1	46.3	45.8	44.6			62.6	44.5	53.5	76.2	.09	
MEANS 21-31	1.17	.90	2.07	1.22	1.14	2.36	1.30	1.31	2.62	1.31	1.32	2.65	43.3	43.4	42.9	41.2	44.8	44.1	43.4	43.3			61.3	43.2	51.3	83.4	.12	
MEANS Month	1.23	.97	2.20	1.25	1.21	2.47	1.33	1.32	2.65	1.32	1.35	2.67	43.7	44.1	43.3	41.1	45.2	44.9	44.1	43.6			61.5	44.0	52.4	79.7	.09	

Table 22. Soil moisture and temperature and related factors.

T I M B E R J U L Y 1 9 5 3

RI- NRM
Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE TIMBER MONTH JULY 1953

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	1.21	.88	2.09	1.21	1.13	2.34	1.31	1.31	2.62	1.33	1.34	2.67	45	46	45	42	46	47	46	46	.03	.06	68	45	54.8	76	.20				0825
2	1.19	.88	2.07	1.19	1.12	2.31	1.29	1.31	2.60	1.33	1.34	2.67	46	46	46	43	49	47	46	46			74	42	58.7	68	.22				1010
3	1.17	.86	2.03	1.19	1.11	2.30	1.29	1.29	2.58	1.30	1.33	2.63	47	47	45	43	48	48	48	46			70	45	58.3	62	.32				0820
4	1.16	.84	2.00	1.16	1.07	2.23	1.28	1.27	2.55	1.29	1.31	2.60	47	48	47	43	48	48	48	47			68	45	56.4	66	.35				0620
5	1.11	.80	1.91	1.16	1.05	2.21	1.24	1.26	2.50	1.26	1.27	2.53	47	47	45	43	55	48	47	46			76	40	58.4	62	.13				1300
6	1.13	.80	1.93	1.14	1.04	2.18	1.23	1.24	2.47	1.27	1.27	2.54	46	47	46	44	48	49	48	47			82	44	63.3	65	.18				0815
7	1.12	.79	1.91	1.13	1.03	2.16	1.24	1.20	2.44	1.25	1.26	2.51	48	49	47	44	50	51	50	48			85	49	66.4	64	.17				0800
8	1.04	.77	1.81	1.13	1.00	2.13	1.20	1.17	2.37	1.25	1.26	2.51	50	50	47	44	52	51	50	48			80	51	64.5	66	.17				0810
9	1.01	.77	1.78	1.11	.99	2.10	1.19	1.14	2.33	1.21	1.18	2.39	48	49	48	44	49	51	50	49			82	44	63.9	61	.22				0805
10	.99	.75	1.74	1.09	.96	2.05	1.17	1.12	2.29	1.20	1.07	2.27	50	50	49	46	51	51	50	50			87	50	67.8	62	.19				0815
11																							90	50	69.2	64					
12																							91	52	71.9	69					
13	.91	.72	1.63	1.05	.91	1.96	1.11	1.03	2.14	1.15	1.03	2.18	54	54	52	48	57	56	54	52			83	58	69.7	67	.12				0750
14	.87	.72	1.59	1.06	.88	1.94	1.06	1.01	2.07	1.13	.99	2.12	55	54	52	49	58	55	54	52			70	57	62.0	86	.17				0935
15	.86	.71	1.57	1.04	.90	1.94	1.08	.99	2.07	1.11	.96	2.07	53	54	53	49	52	54	54	53	1.59A	.95A									0825
16	1.04	.84	1.88	1.20	1.09	2.29	1.22	1.08	2.30	1.18	1.08	2.26	51	50	50	48	46	52	51	51	1.98A	1.19A									1235
17	1.21	1.23	2.44	1.32	1.41	2.73	1.25	1.19	2.44	1.25	1.24	2.49	54	55	54	51	54	54	54	53	.79A	.79A									0925
18	1.29	1.23	2.52	1.32	1.43	2.75	1.28	1.26	2.54	1.28	1.28	2.56	55	56	54	51	54	55	54	54											0630
19	1.21	1.05	2.26	1.26	1.26	2.52	1.24	1.19	2.43	1.25	1.25	2.50	54	54	54	50	54	55	54	54											0520
20	1.13	.90	2.03	1.19	1.12	2.31	1.20	1.12	2.32	1.20	1.17	2.37	53	54	54	50	52	54	54	53											0835
21	1.10	.83	1.93	1.15	1.04	2.19	1.15	1.12	2.27	1.19	1.05	2.24	50	51	51	50	52	51	51	51											1045
22																															
23																															
24																															
25																															
26																															
27																															
28																															
29																															
30																															
31																															
SUMS 1-10																					.03	.06									
SUMS 11-20																					4.35A	2.93A									
SUMS 21-31																					--	--									
SUMS Month																															
MEANS 1-10	1.11	.81	1.93	1.15	1.05	2.20	1.24	1.23	2.48	1.27	1.26	2.53	47.4	47.9	46.5	43.6	49.6	49.1	48.3	47.3			77.2	45.5	61.3	65.2	.22				
MEANS 11-20	1.06	.92	1.99	1.18	1.12	2.30	1.18	1.11	2.29	1.19	1.12	2.32	53.6	53.9	52.9	49.5	53.4	54.4	53.6	52.8			83.5	54.2	68.1	71.5	.14				
MEANS 21-31	--	--	--	--	--	--	--	--	--	--	--	--	-	-	-	-	-	-	-	-			-	-	-	-	-				
MEANS Month	1.09	.86	1.96	1.16	1.08	2.25	1.22	1.18	2.39	1.24	1.20	1.88	50.2	50.6	49.4	46.3	51.3	51.5	50.7	49.8			79.0	48.0	63.2	67.0	.20				

[1] A = artificial precipitation.

Table 23. Soil moisture and temperature and related factors.

BENTON JULY 1952

RI- NRM
Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE BENTON MONTH JULY 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION/ TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1																															
2																															
3																															
4																															
5																															
6																															
7	1.12	1.13	2.25	1.19	1.17	2.36	.99	.99	1.98	.94	1.21	2.15	45	444	42	43	43	43	45	43											1040
8	1.09	1.10	2.19	1.17	1.16	2.32	.94	.95	1.89	.91	1.18	2.09	52	47	44	44	50	47	47	45							.07				1500
9	1.09	1.10	2.19	1.16	1.18	2.34	.95	.94	1.89	.91	1.18	2.09	51	48	47	47	47	47	48	44							.01				0800
10	1.07	1.06	2.13	1.13	1.10	2.23	.79	.89	1.68	.88	1.16	2.04	52	50	46	46	52	51	51	47							.08				1115
11	1.05	1.06	2.11	1.11	1.05	2.16	.73	.86	1.59	.84	1.13	1.97	52	48	48	48	52	52	52	47							.19				1615
12	.97	.96	1.93	1.09	1.04	2.13	.69	.84	1.53	.83	1.12	1.95	57	55	51	49	57	56	56	52							.47				1625
13	.97	.95	1.92	1.06	1.03	2.09	.68	.84	1.52	.82	1.11	1.93	53	51	49	49	51	50	52	47							.05				1215
14	.97	.94	1.91	1.06	1.00	2.06	.65	.81	1.46	.81	1.09	1.90	52	51	46	47	51	50	51	47							.08				1130
15	.85	.92	1.77	1.02	.98	2.00	.65	.80	1.45	.80	1.08	1.88	52	50	47	46	51	50	51	48							.26				1110
16	.85	.88	1.71	.97	.97	1.94	.62	.79	1.41	.80	1.07	1.87	51	49	47	46	49	48	50	47							.27				1055
17	.81	.85	1.66	.96	.96	1.92	.61	.76	1.37	.79	1.06	1.85	50	48	46	45	49	49	50	47			66	49	57.8	67	.65				1135
18	.85	.86	1.71	.95	.96	1.91	.60	.75	1.35	.78	1.06	1.84	48	47	46	46	47	47	48	47			71	45	58.1	71	.02				1030
19	.84	.85	1.69	.95	.95	1.90	.60	.75	1.35	.77	1.05	1.82	49	48	46	46	48	48	50	47	.06	.06	67	51	57.8	77	.04				0900
20	.84	.86	1.70	.95	.94	1.89	.59	.74	1.33	.76	1.05	1.81	47	46	46	46	48	48	50	47			67	51	57.2	71	.31				0835
21	.75	.79	1.54	.91	.92	1.83	.56	.72	1.28	.74	1.04	1.78	49	47	46	46	48	47	49	47			64	45	53.5	65	.26				1340
22	.75	.79	1.54	.91	.91	1.82	.56	.71	1.27	.75	1.03	1.78	46	46	45	46	45	46	47	47			69	40	54.7	69	.19				0845
23	.72	.79	1.51	.89	.90	1.79	.54	.70	1.24	.74	1.02	1.76	48	47	46	46	47	47	48	47			78	46	62.0	61	.18				0850
24	.70	.78	1.48	.87	.88	1.75	.52	.67	1.19	.72	1.02	1.74	48	47	46	45	47	48	50	47			66	47	57.6	64	.88				0950
25	.70	.77	1.47	.88	.89	1.77	.53	.66	1.19	.72	1.01	1.73	47	47	46	46	47	47	49	47			74	43	57.5	66	.21				0810
26	.66	.74	1.40	.86	.88	1.74	.52	.64	1.16	.70	1.01	1.71	49	48	46	46	47	47	48	46			83	45	62.0	58	.12				1120
27	.63	.73	1.36	.86	.88	1.74	.49	.63	1.12	.69	1.00	1.69	49	48	46	46	48	47	49	47			78	46	61.6	59	.25				1050
28	.59	.69	1.28	.84	.87	1.71	.47	.62	1.09	.69	1.00	1.69	54	52	47	47	52	51	51	47			82	48	63.1	63	.25				1445
29	.57	.68	1.25	.83	.86	1.69	.46	.61	1.07	.68	.98	1.66	52	50	49	48	49	48	50	47			83	49	64.4	60	.02				1045
30	.54	.66	1.20	.84	.88	1.72	.44	.58	1.02	.64	.98	1.62	57	52	50	47	53	52	52	47			86	49	63.5	58	.11				1425
31	.51	.63	1.14	.81	.85	1.66	.44	.56	1.00	.63	.97	1.60	53	52	49	48	52	51	51	47			87	48	64.2	64	.00				1125
SUMS 1-10	4.37	4.39	8.76	4.65	4.60	9.25	3.67	3.77	7.44	3.64	4.73	8.37	200	189	179	180	192	188	191	179	.00	.00	-	-		-	.16				
SUMS 11-20	8.98	9.13	18.11	10.12	9.38	20.00	6.42	7.94	14.36	8.00	10.82	18.82	511	493	472	468	503	498	510	476	.06	.06	271	196		286	2.34				
SUMS 21-31	7.12	8.05	15.17	9.50	9.72	19.22	5.53	7.10	12.63	7.70	11.06	18.76	552	536	516	511	535	531	544	516	.00	.00	850	506		687	2.47				
SUMS Month	20.47	21.57	42.04	24.27	24.20	48.47	15.62	18.81	34.43	19.54	26.61	45.95	1263	1218	1167	1159	1230	1217	1245	1171	.06	.06	1121	702		973	4.97				
MEANS 1-10	1.09	1.10	2.19	1.16	1.15	2.31	.92	.94	1.86	.91	1.18	2.09	50	47	45	45	48	47	48	45			—	—	—	—	.05				
MEANS 11-20	.90	.91	1.81	1.01	.99	2.00	.64	.79	1.44	.80	1.08	1.88	51	49	47	47	50	50	51	48			68	49	57.7	72	.23				
MEANS 21-31	.65	.73	1.38	.86	.88	1.75	.50	.64	1.15	.70	1.00	1.70	49	49	47	46	49	48	49	47			77	46	60.4	62	.22				
MEANS Month	.82	.86	1.68	.97	.97	1.94	.62	.75	1.38	.77	1.06	1.84	50	49	47	46	49	49	50	46			75	47	59.6	65	.21				

/A = artificial precipitation.

Table 24.4 Soil moisture and temperature and related factors.

BENTON - August 1952

RI- NRM
Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE [illegible] MONTH AUGUST 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.49	.62	1.11	.81	.85	1.66	.45	.54	.97	.61	.96	1.57	50	46	46	46	52	51	52	48			81	52	64.7	59	.39				1115
2	.48	.58	1.06	.79	.83	1.62	.42	.52	.94	.59	.94	1.53	52	52	48	49	48	48	51	47			81	47	62.4	57	.03				1010
3	.46	.58	1.04	.77	.83	1.60	.42	.51	.93	.57	.94	1.51	51	50	48	47	49	48	50	47			82	48	64.4	61	.05				0955
4	.44	.54	.98	.77	.83	1.60	.41	.47	.88	.56	.94	1.50	56	49	48	47	52	52	52	47			No record			[illegible]	.12				1455
5	.43	.51	.94	.75	.82	1.57	.41	.47	.88	.55	.94	1.49	52	52	50	49	52	51	52	48			85	53	66.6	54	.08				1005
6	.41	.49	.90	.74	.82	1.56	.40	.46	.86	.54	.92	1.46	52	52	49	48	51	51	52	48			74	50	60.6	60	.48				0900
7	.41	.47	.88	.73	.81	1.54	.40	.45	.85	.54	.90	1.44	52	51	48	48	50	50	52	48			71	42	59.1	70	.16				1000
8	.40	.45	.85	.73	.81	1.54	.40	.44	.84	.53	.88	1.41	53	52	49	48	52	52	52	48			80	53	65.5	63	.09				1025
9	.39	.43	.82	.70	.80	1.50	.39	.43	.82	.53	.85	1.38	56	52	49	48	52	52	52	48			83	50	64.2	66	.11				1320
10	.39	.43	.82	.69	.79	1.48	.39	.42	.81	.53	.84	1.37	54	52	49	49	52	52	52	48	.13	.13	62	53	58.5	91	.04				1210
11	.40	.43	.83	.69	.79	1.48	.39	.42	.81	.52	.82	1.34	57	52	49	49	52	52	53	47			72	48	57.4	71	.08				1540
12	.40	.42	.82	.67	.79	1.46	.39	.42	.81	.52	.81	1.33	52	52	50	49	51	51	52	50			78	47	61.2	67	.04				1005
13	.40	.42	.82	.67	.78	1.45	.39	.41	.80	.52	.79	1.31	56	52	48	48	52	52	52	48			83	50	64.4	58	.53				1430
14	.39	.42	.81	.64	.78	1.42	.38	.41	.79	.52	.78	1.30	56	53	50	50	52	52	52	49			77	48	61.9	53	.41				1525
15	.39	.40	.79	.62	.77	1.39	.38	.41	.79	.51	.77	1.28	52	51	48	48	52	51	52	48			71	49	59.0	59	.86				1440
16	.38	.40	.78	.60	.77	1.37	.38	.40	.78	.51	.77	1.28	52	50	48	48	50	49	51	48			67	43	54.4	62	.46				1510
17	.38	.40	.78	.57	.76	1.33	.38	.40	.78	.51	.76	1.27	52	49	48	48	47	48	51	48			73	40	56.2	62	.11				1305
18	.38	.40	.78	.57	.75	1.32	.38	.40	.78	.51	.76	1.27	52	52	49	49	50	50	52	50			71	44	55.1	63	.22				1108
19	.38	.40	.78	.54	.74	1.28	.38	.40	.78	.51	.75	1.26	47	47	47	47	45	47	48	47			67	40	52.6	64	.29				0920
20	.38	.39	.77	.52	.73	1.25	.37	.39	.76	.51	.75	1.26	49	47	46	46	47	47	47	47			72	39	53.7	65	.16				1430
21	.38	.39	.77	.51	.73	1.24	.37	.39	.76	.51	.75	1.26	46	47	46	46	44	47	47	47			76	40	56.3	63	.00				0900
22	.38	.39	.77	.50	.73	1.23	.36	.38	.74	.51	.74	1.25	52	48	45	45	50	48	48	47			75	43	59.1	62	.31				1420
23	.37	.38	.75	.50	.72	1.22	.35	.38	.73	.50	.74	1.24	52	49	46	46	51	49	50	47			71	49	58.9	58	.51				1400
24	.37	.38	.75	.49	.71	1.20	.35	.38	.73	.50	.73	1.23	52	49	46	46	51	50	50	48			72	41	55.5	70	.18				1420
25	.37	.38	.75	.48	.70	1.18	.35	.38	.73	.50	.73	1.23	49	49	47	48	47	47	48	47			62	40	52.8	65	.96				1040
26	.37	.38	.75	.48	.71	1.19	.36	.38	.74	.50	.73	1.23	44	45	45	46	43	44	47	46			65	36	48.2	70	.01				0930
27	.37	.38	.75	.48	.70	1.18	.35	.37	.72	.50	.73	1.23	47	46	44	45	47	46	47	45			68	37	50.7	69	.01				1445
28	.37	.38	.75	.48	.69	1.17	.35	.38	.73	.50	.73	1.23	44	45	45	46	43	44	47	47		4.19A	69	37	53.4	64	.00				0815
29	.37	.38	.75	.48	.68	1.16	1.02	.99	2.01	1.01	.95	1.96	47	46	44	44	52	52	53	52			64	38	52.5	61	.15				1135
30	.37	.38	.75	.47	.67	1.14	.90	.89	1.79	.94	.96	1.90	48	47	46	46	51	51	52	52			62	34	47.2	66	.45				1610
31	.37	.38	.75	.47	.67	1.14	.76	.87	1.63	.90	.96	1.86	48	47	46	46	49	49	52	51			67	42	52.2	64	.11				1130
SUMS 1-10																					.13	.13									
SUMS 11-20																															
SUMS 21-31																						4.19A									
SUMS Month																					.13	4.32									
MEANS 1-10	.43	.51	.94	.75	.82	1.57	.41	.47	.88	.56	.91	1.47	52.8	50.8	48.4	47.9	51.0	50.7	51.7	47.7			77.6	49.7	62.8	64.7	.16				
MEANS 11-20	.39	.41	.80	.61	.77	1.38	.38	.41	.79	.51	.78	1.29	52.3	50.5	48.3	48.2	49.8	49.9	50.9	48.2			73.1	44.8	57.5	62.4	.32				
MEANS 21-31	.37	.38	.75	.49	.70	1.19	.50	.53	1.03	.62	.80	1.42	48.1	47.1	45.4	45.8	48.0	47.9	49.2	48.1			68.3	39.7	53.3	64.7	.24				
MEANS Month	.40	.43	.83	.61	.76	1.37	.43	.47	.90	.57	.83	1.39	51.0	49.4	47.3	47.1	49.6	49.5	50.6	48.0			70.4	43.0	55.7	61.9	.24				

/ A = artificial precipitation.

Table 25. Soil moisture and temperature and related factors.

BENTON - September 1952

RI- NRM
Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE BENTON MONTH September 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.37	.38	.75	.47	.65	1.12	.65	.80	1.45	.87	1.96	1.83	48	47	46	47	47	47	50	48			68	38	52.0	65	.13				1105
2	.37	.37	.74	.46	.64	1.10	.58	.75	1.33	.83	.94	1.77	48	45	44	44	47	47	47	47			74	39	54.7	64	.14				1340
3	.37	.37	.74	.46	.63	1.09	.55	.73	1.28	.80	.94	1.74	47	46	44	45	47	48	51	47			69	47	55.9	70	.05				0715
4	.37	.37	.74	.46	.63	1.09	.52	.69	1.21	.77	.94	1.71	48	48	47	47	46	47	49	47			71	41	53.8	59	.02				0910
5	.37	.37	.74	.46	.61	1.07	.47	.65	1.12	.71	.95	1.66	47	46	44	45	46	46	47	45			61	45	51.7	72	.15				1315
6	.37	.37	.74	.46	.61	1.07	.45	.59	1.04	.67	.93	1.60	51	48	47	47	49	48	51	47	.02	.02	65	45	52.0	84	.13				1225
7	.37	.37	.74	.46	.60	1.06	.44	.55	.99	.62	.92	1.54	47	47	46	47	47	48	51	49			57	38	47.5	69	.35				1005
8	.37	.37	.74	.46	.60	1.06	.43	.51	.94	.58	.90	1.48	44	46	46	47	43	45	47	47	.01	.01	52	36	43.5	91	.41				1050
9	.38	.37	.75	.46	.60	1.06	.43	.49	.92	.57	.88	1.45	46	46	45	46	46	47	48	47	.30	.30	51	45	47.9	96	.00				0955
10	.43	.38	.81	.46	.59	1.05	.47	.49	.96	.56	.88	1.44	47	47	45	46	47	47	49	47	T	T	59	46	50.8	87	.00				0945
11	.42	.38	.80	.46	.59	1.05	.47	.49	.96	.56	.87	1.43	44	45	44	45	46	47	47	47		4.19A	67	41	51.1	77	.00				0910
12	.41	.38	.79	.46	.59	1.05	1.07	1.10	2.17	1.19	1.28	2.47	46	46	44	44	47	47	47	47	.02	.02	56	36	48.0	81	.19				0735
13	.40	.38	.78	.46	.59	1.05	1.03	.99	2.02	1.05	1.25	2.30	46	46	45	46	47	47	50	49			58	30	42.5	74	.28				1520
14	.40	.38	.78	.46	.58	1.04	.99	.95	1.94	1.02	1.23	2.25	44	44	44	45	43	44	47	46			62	31	44.4	77	.05				1255
15	.39	.38	.77	.46	.58	1.04	.86	.89	1.75	.98	1.20	2.18	45	44	44	45	44	44	46	45			70	36	47.7	73	.46				1255
16	.38	.38	.76	.46	.58	1.04	.72	.86	1.58	.95	1.18	2.13	46	45	44	44	45	45	47	46			72	37	51.0	68	.03				1255
17	.38	.38	.76	.46	.58	1.04	.65	.82	1.47	.92	1.16	2.08	47	46	45	46	47	47	47	47			74	41	53.6	69	NR				1115
18	.38	.38	.76	.46	.58	1.04	.59	.78	1.37	.88	1.12	2.00	48	47	45	46	47	47	47	47			77	43	56.7	72	NR				1145
19	.38	.38	.76	.46	.58	1.04	.54	.75	1.29	.84	1.10	1.94	50	48	46	46	47	47	50	47			73	45	55.6	72	.22				1125
20	.38	.38	.76	.46	.58	1.04	.52	.71	1.23	.80	1.09	1.89	48	48	47	47	47	47	51	48			73	42	55.0	63	.09				0810
21	.38	.38	.76	.45	.57	1.02	.48	.64	1.12	.74	1.06	1.80	48	47	46	46	47	47	48	47			71	45	54.4	63	.31				1210
22	.38	.38	.76	.45	.57	1.02	.45	.61	1.06	.69	1.05	1.74	45	46	46	46	44	46	48	47			71	38	50.6	72	.05				0750
23	.37	.38	.75	.45	.57	1.02	.43	.55	.98	.65	1.05	1.70	45	46	46	46	44	46	48	45			72	38	50.7	68	.04				0840
24	.37	.38	.75	.45	.57	1.02	.42	.51	.93	.59	1.02	1.61	45	46	46	46	44	46	47	46			72	39	52.2	68	.11				0715
25	.37	.38	.75	.45	.57	1.02	.41	.48	.89	.56	1.00	1.56	47	47	47	47	47	47	51	48			77	41	54.4	67	.08				0835
26	.37	.37	.74	.45	.57	1.02	.40	.45	.85	.54	.96	1.50	48	48	47	47	49	48	48	47		4.19A	80	45	60.4	57	.12				1420
27	.37	.37	.74	.45	.56	1.01	.99	.98	1.97	1.04	1.17	2.21	48	48	46	46	52	52	54	52			64	44	53.0	61	NR				1345
28	.37	.37	.74	.45	.56	1.01	.90	.90	1.80	.98	1.17	2.15	47	47	46	47	48	50	52	51			66	40	50.9	68	NR				1035
29	.37	.37	.74	.45	.56	1.01	.70	.86	1.56	.95	1.17	2.12	46	46	46	46	46	47	51	48			69	39	51.0	71	NR				0945
30	.37	.37	.74	.45	.56	1.01	.63	.80	1.43	.90	1.13	2.03	45	46	45	45	45	47	49	47			66	39	49.5	71	NR				0825
31																															
SUMS 1-10																					.55 .33	.33 .33									
SUMS 11-20																					.02	4.11 4.19									
SUMS 21-31																					—	4.19									
SUMS Month																					.32 .35	8.63 8.73									
MEANS 1-10	.38	.37	.75	.46	.62	1.08	.50	.62	1.12	.70	.92	1.62	47.3	46.6	45.4	46.1	46.5	47.0	49.0	47.1			62.7	42.0	51.0	75.7	.14				
MEANS 11-20	.39	.38	.77	.46	.58	1.04	.74	.83	1.58	.92	1.15	2.07	46.4	45.9	44.8	45.4	46.0	46.2	47.9	46.9			68.2	38.2	50.6	72.6	.16				
MEANS 21-31	.37	.38	.75	.45	.57	1.02	.58	.68	1.26	.76	1.08	1.84	45.3	46.7	46.1	46.2	46.6	47.6	49.6	47.8			70.8	40.6	52.7	66.6	.12				
MEANS Month	.38	.38	.76	.46	.59	1.04	.61	.71	1.32	.79	1.06	1.84	46.6	46.4	45.4	45.9	46.3	46.9	48.9	47.3			67.2	40.2	51.4	71.6	.14				

/A = artificial precipitation.

Table 26. Soil moisture and temperature and related factors.

BENTON - October 1952

RI- NRM
Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE BENTON MONTH OCTOBER 195 2

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches)						SOIL MOISTURE TIER 2 Soil Depth (Inches)						SOIL TEMPERATURE TIER 1 Soil Depth (Inches)				SOIL TEMPERATURE TIER 2 Soil Depth (Inches)				PRECIPITATION TIER 1	PRECIPITATION TIER 2	AIR TEMPERATURE MAXIMUM	AIR TEMPERATURE MINIMUM	AIR TEMPERATURE MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	0-3	3-6	0-6	6-9	9-12	6-12	0-3	3-6	0-6	6-9	9-12	6-12	1-1/2	4-1/2	7-1/2	10-1/2	1-1/2	4-1/2	7-1/2	10-1/2											
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.37	.37	.74	.45	.56	1.01	.59	.68	1.27	.84	1.11	1.95	47	45	44	44	46	46	47	47			65	37	47.8	75	NR				1400
2	.37	.37	.74	.45	.56	1.01	.53	.73	1.26	.82	1.08	1.90	43	44	44	44	43	44	47	47			71	36	49.2	71	.02				0930
3	.37	.37	.74	.45	.56	1.01	.50	.68	1.18	.77	1.06	1.83	47	46	45	46	46	46	47	47			66	36	47.0	67	.30				1320
4	.37	.37	.74	.45	.56	1.01	.46	.63	1.09	.69	1.04	1.73	45	44	43	44	44	44	46	45			61	30	42.5	61	.07				1620
5	.36	.37	.73	.44	.56	1.00	.44	.59	1.03	.66	1.02	1.68	42	44	44	45	41	43	46	45			60	30	42.5	71	.00				1125
6	.37	.37	.74	.44	.56	1.00	.43	.55	.98	.61	1.01	1.62	41	43	44	44	40	43	46	45			61	33	43.9	76	.03				0845
7	.36	.37	.73	.44	.56	1.00	.42	.51	.93	.57	.98	1.55	44	42	43	44	42	42	44	43			59	32	43.7	73	.05				1350
8	.36	.37	.73	.44	.56	1.00	.41	.48	.89	.56	.95	1.51	42	42	42	43	40	41	44	43			60	34	44.6	68	.06				1120
9	.36	.37	.73	.44	.56	1.00	.41	.46	.87	.54	.94	1.48	44	43	42	43	43	43	44	43			67	36	47.2	70	.08				1320
10	.36	.37	.73	.44	.56	1.00	.41	.45	.86	.53	.90	1.43	45	45	45	46	42	43	47	45			59	36	45.7	79	.09				1110
11	.36	.37	.73	.44	.55	.99	.40	.44	.84	.53	.88	1.41	43	44	44	45	42	44	47	47			64	36	46.8	77	.05				0920
12	.36	.36	.72	.44	.55	.99	.40	.43	.83	.53	.83	1.36	42	43	43	44	42	42	45	44			63	35	44.9	75	NR				1050
13	.36	.37	.73	.44	.55	.99	.40	.43	.83	.53	.80	1.33	40	42	44	44	42	43	47	46			54	30	41.2	68	NR				0835
14	.36	.37	.73	.44	.55	.99	.39	.42	.81	.52	.78	1.30	40	40	41	43	39	39	42	42			48	25	34.2	77	.18				1550
15	.36	.37	.73	.44	.55	.99	.40	.41	.81	.52	.78	1.30	38	39	41	43	36	38	42	42			53	25	35.6	71	.04				1100
16	.36	.37	.73	.44	.55	.99	.39	.41	.80	.52	.77	1.29	41	40	40	42	39	39	41	41			54	29	38.5	76	.14				1435
17	.36	.37	.73	.44	.55	.99	.39	.41	.80	.52	.76	1.28	40	40	40	42	38	39	42	42			49	29	38.1	82	.07				1315
18	.36	.36	.72	.44	.55	.99	.39	.41	.80	.52	.76	1.28	39	39	40	42	37	39	41	42			51	29	38.9	82	.04				1140
19	.36	.36	.72	.44	.55	.99	.38	.40	.78	.52	.76	1.28	42	41	40	42	39	40	42	42			54	32	41.0	84	.04				1420
20	.36	.37	.73	.44	.55	.99	.39	.41	.80	.52	.76	1.28	42	41	41	42	40	40	42	42		4.19A	53	34	42.0	87	.06				1415
21	.36	.37	.73	.44	.55	.99	1.01	.98	1.99	1.19	.80	1.99	42	42	40	42	44	45	47	44			60	39	47.1	84	.02				1010
22	.36	.37	.73	.44	.55	.99	.92	.90	1.82	1.07	.84	1.91	40	42	41	42	41	43	46	44			51	33	40.4	84	.02				0820
23	.36	.37	.73	.44	.55	.99	.77	.84	1.61	1.04	.87	1.91	39	40	40	42	39	41	43	43			49	32	39.5	88	.04				1010
24	.36	.37	.73	.44	.55	.99	.71	.81	1.52	.99	.88	1.87	41	41	40	41	39	40	43	42	T	T	54	33	42.1	79	.10				1015
25	.36	.37	.73	.44	.55	.99	.66	.77	1.43	.96	.88	1.84	37	39	40	41	36	40	42	42			42	28	33.5	86	.31				1000
26	.36	.37	.73	.44	.55	.99	.62	.74	1.36	.93	.88	1.81	36	37	38	40	37	41	41	41			41	25	32.4	80	.02				1300
27	.36	.37	.73	.44	.55	.99	.61	.73	1.34	.90	.88	1.78	37	38	40	40	35	36	39	39			42	27	34.0	83	.45				1335
28	.36	.37	.73	.44	.55	.99	.59	.71	1.30	.88	.88	1.76	37	38	39	41	36	37	40	40			42	25	32.8	86	NR				1325
29	.36	.37	.73	.44	.55	.99	.57	.70	1.27	.84	.88	1.72	37	37	38	40	36	36	39	39			43	31	37.2	88	NR				1155
30	.37	.37	.74	.44	.55	.99	.62	.69	1.31	.82	.88	1.70	40	40	40	40	39	39	42	41	.26	.26	45	33	39.7	97	NR				0925
31	.42	.37	.79	.44	.55	.99	.72	.72	1.44	.83	.88	1.71	37	38	39	40	36	36	39	39	T	T	38	30	34.1	96	.02				1350
SUMS 1-10																															
SUMS 11-20																						4.19A									
SUMS 21-31																					.26	.26									
SUMS Month																					.26	4.45									
MEANS 1-10	.36	.37	.74	.44	.56	1.00	.46	.58	1.04	.66	1.01	1.67	44.0	43.8	43.6	44.3	42.7	43.5	45.8	45.0			62.9	34.0	45.4	71.1	.08				
MEANS 11-20	.36	.37	.73	.44	.55	.99	.39	.42	.81	.52	.79	1.31	40.7	40.9	41.4	42.9	39.4	40.3	43.1	43.0			54.3	30.4	40.1	77.9	.08				
MEANS 21-31	.37	.37	.74	.44	.55	.99	.71	.78	1.49	.95	.87	1.82	38.5	39.3	39.5	40.8	38.0	39.4	41.9	41.3			46.1	30.5	37.5	86.4	.14				
MEANS Month	.36	.37	.73	.44	.55	.99	.53	.60	1.12	.72	.89	1.60	41.0	41.5	41.4	42.6	40.0	41.0	43.6	43.0			54.2	31.6	40.9	78.7	.92				

/ A = artificial precipitation.

Table 27. Soil moisture and temperature and related factors.

M E A D O W J U L Y 1 9 5 2

RI- NRM
Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE MEADOW MONTH JULY 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION/ TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1																															
2																															
3																															
4																															
5																															
6																															
7	1.28	1.46	2.74	1.45	1.49	2.94	1.17	1.30	2.47	1.18	1.06	2.24	62	56	55	55	54	50	51	51			81	38	59.7	66					1100
8	1.25	1.42	2.67	1.41	1.46	2.87	1.11	1.22	2.33	1.13	.99	2.12	75	65	60	57	65	56	54	51			88	44	66.0	64	.88				1535
9	1.25	1.42	2.67	1.39	1.41	2.80	1.12	1.20	2.32	1.11	.96	2.07	61	59	60	58	55	54	54	53			92	49	69.8	63	.28				0900
10	1.24	1.41	2.65	1.37	1.40	2.77	1.01	1.14	2.15	1.08	.93	2.01	73	65	62	60	66	58	55	54			--	--	--	--	.27				1145
11	1.22	1.37	2.59	1.39	1.32	2.71	.97	1.13	2.10	1.06	.90	1.96	69	64	62	61	60	54	54	54			--	--	--	--	.70				1000
12	1.20	1.35	2.55	1.29	1.27	2.56	.85	.98	1.83	1.03	.86	1.89	82	74	70	66	70	63	59	56			77	49	65.4	56	2.10				1730
13	1.20	1.34	2.54	1.28	1.22	2.50	.85	.96	1.81	1.02	.83	1.85	74	66	65	64	64	58	57	56			82	44	63.3	65	.52				1230
14	1.16	1.31	2.47	1.24	1.16	2.40	.79	.87	1.66	.96	.82	1.78	80	69	65	62	65	58	55	53			88	47	--	66	1.11				1520
15	1.15	1.29	2.44	1.23	1.13	2.36	.81	.87	1.68	.95	.81	1.76	69	65	64	63	61	55	55	54			85	48	66.5	58	.59				1025
16	1.13	1.27	2.40	1.20	1.11	2.31	.79	.83	1.62	.88	.76	1.64	69	64	63	62	60	55	55	54			81	48	63.9	56	1.17				1125
17	1.11	1.26	2.37	1.18	1.07	2.25	.77	.80	1.57	.83	.72	1.55	68	64	63	62	60	55	55	54			73	47	59.2	73	.84	two			1200
18	1.08	1.25	2.33	1.17	1.05	2.22	.77	.83	1.60	.84	.71	1.55	68	60	61	61	54	52	53	54	.05	.05	76	48	61.2	72	.84	clay			0820
19	1.11	1.24	2.35	1.16	1.02	2.18	.78	.81	1.59	.81	.69	1.50	61	61	61	61	56	54	54	54	.11	.11	73	51	60.4	78	.79				0935
20	1.11	1.24	2.35	1.15	1.01	2.16	.80	.81	1.61	.82	.68	1.50	59	60	61	61	55	54	54	54			72	49	59.5	72	1.00				0900
21	1.07	1.22	2.29	1.14	.99	2.13	.76	.79	1.55	.80	.66	1.46	70	63	60	60	62	55	54	53	.01	.01	68	41	55.4	65	1.31				1435
22	1.12	1.22	2.34	1.13	.98	2.11	.80	.80	1.60	.81	.66	1.47	55	58	59	60	49	51	53	53			75	37	56.9	67	.31				0740
23	1.18	1.33	2.51	1.33	1.33	2.66	.77	.78	1.55	.78	.64	1.42	57	59	59	59	52	52	53	52			82	44	65.5	57	1.04				0800
24	1.15	1.29	2.44	1.25	1.19	2.44	.76	.76	1.52	.76	.61	1.37	61	62	61	60	56	54	54	54			71	45	58.3	66	2.37				0930
25	1.19	1.34	2.53	1.35	1.35	2.68	.75	.76	1.51	.76	.60	1.36	58	59	60	60	54	51	52	52			80	40	60.0	66	.72				0930
26	1.17	1.34	2.51	1.31	1.32	2.63	.72	.72	1.44	.72	.57	1.29	69	61	61	60	62	54	53	52			87	43	64.3	57	.92				1145
27	1.16	1.33	2.49	1.31	1.31	2.62	.71	.71	1.42	.71	.55	1.26	68	63	61	62	61	54	54	54			83	41	63.1	64	1.14				1115
28	1.10	1.28	2.38	1.26	1.25	2.51	.66	.64	1.30	.67	.53	1.20	80	70	66	63	66	59	55	54			89	46	66.4	66	.79				1600
29	1.11	1.29	2.40	1.28	1.27	2.55	.68	.67	1.35	.68	.53	1.21	70	63	61	61	63	54	54	54			90	47	68.2	62	.81				1110
30	1.06	1.26	2.32	1.24	1.23	2.47	.61	.60	1.21	.63	.51	1.14	80	69	65	62	68	60	55	53			94	47	68.4	60	.94				1545
31	1.08	1.27	2.35	1.25	1.26	2.51	.63	.61	1.24	.65	.51	1.16	71	65	64	63	62	55	54	54			91	45	67.3	65	.81				1145
SUMS 1-10																					.00	.00									
SUMS 11-20																					.16	.16									
SUMS 21-31																					.01	.01									
SUMS Month																					.17	.17									
MEANS 1-10	1.25	1.43	2.68	1.40	1.44	2.84	1.10	1.22	2.32	1.12	.98	2.11	67.8	61.2	59.2	57.5	60.0	56.7	53.5	52.2			87.0	43.7	59.1	66.9	.68				
MEANS 11-20	1.15	1.29	2.44	1.23	1.14	2.36	.82	.89	1.71	.92	.78	1.70	69.9	64.7	63.5	62.3	60.5	55.8	55.1	54.3			70.7	42.6	62.4	66.1	.97				
MEANS 21-31	1.13	1.29	2.41	1.26	1.22	2.48	.71	.71	1.43	.72	.58	1.30	67.2	62.9	61.5	60.9	59.5	54.4	53.7	53.2			82.7	43.3	63.1	63.2	1.01				
MEANS Month	1.16	1.31	2.47	1.27	1.22	2.49	.82	.86	1.68	.87	.72	1.59	68.4	63.4	62.0	60.9	60.0	55.0	54.2	53.5			81.6	44.9	63.6	65.3	.95				

/A = artificial precipitation.

Table 28. Soil moisture and temperature and related factors.

M E A D O W A U G U S T 1 9 5 2

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE MEADOW MONTH AUGUST 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	1.11	1.30	2.41	1.31	1.33	2.64	.65	.62	1.27	.63	.51	1.14	62	64	65	64	55	54	55	54			86	51	67.2	63	.59				0825
2	1.03	1.26	2.29	1.24	1.26	2.50	.60	.59	1.19	.62	.49	1.11	65	62	61	62	60	54	54	54			88	45	65.9	69	.59				1035
3	.97	1.22	2.19	1.20	1.21	2.41	.60	.56	1.16	.58	.48	1.06	67	63	63	63	60	54	54	54			90	45	67.2	63	.56				1030
4	.78	1.16	1.94	1.15	1.15	2.30	.56	.54	1.10	.55	.47	1.02	77	68	64	61	69	60	55	53			92	48	69.8	61	.65				1525
5	.85	1.16	2.01	1.15	1.14	2.29	.59	.56	1.15	.55	.47	1.02	68	64	63	63	63	55	55	54			91	52	69.1	55	.65				1030
6	.82	1.13	1.95	1.15	1.11	2.24	.59	.56	1.14	.55	.46	1.01	63	62	62	62	60	55	55	55	T	T	80	49	63.6	61	1.20				1050
7	.76	1.11	1.87	1.09	1.06	2.15	.60	.56	1.16	.54	.47	1.01	65	63	62	63	60	55	55	54			78	46	63.8	68	1.37				1020
8	.69	1.07	1.76	1.04	.99	2.03	.56	.54	1.10	.53	.46	.99	70	64	63	62	64	57	55	54			88	55	71.1	60	1.13				1120
9	.60	1.01	1.61	1.01	1.06	2.07	.53	.53	1.06	.51	.43	.94	74	66	64	62	69	58	54	54			90	49	68.7	66	.79				1340
10	.89	1.23	2.12	1.28	1.48	2.76	.57	.53	1.10	.51	.44	.95	65	65	64	62	61	58	56	55	.21	.21	72	51	61.3	90	.50				1235
11	.90	1.25	2.15	1.29	1.45	2.74	.57	.53	1.10	.51	.44	.95	71	65	63	60	68	60	55	55			82	45	62.8	68	.60				1600
12	.89	1.19	2.08	1.22	1.36	2.58	.58	.53	1.11	.52	.44	.96	65	61	60	61	63	55	54	54			87	46	65.8	67	.83				1055
13	.65	1.07	1.72	1.07	1.18	2.25	.54	.52	1.06	.49	.42	.91	74	66	63	61	68	60	55	54			88	50	67.7	57	1.24				1455
14	.58	1.00	1.58	1.00	1.08	2.08	.55	.52	1.07	.49	.42	.91	71	65	62	61	65	59	55	54			82	47	64.0	56	1.46				1545
15	.56	.97	1.53	.96	1.01	1.97	.55	.52	1.07	.48	.42	.90	68	62	61	60	63	56	54	54			74	48	61.2	62	1.89				1510
16	.61	.97	1.58	.96	1.01	1.97	.55	.52	1.07	.48	.42	.90	71	63	60	60	64	56	54	54			73	41	56.6	64	1.32				1425
17	.63	.98	1.61	.96	.97	1.93	.52	.52	1.04	.48	.42	.90	71	61	60	60	64	55	53	51			81	38	58.9	60	.08				1330
18	.68	.99	1.67	.96	.98	1.94	.55	.53	1.08	.48	.43	.91	67	61	60	60	63	54	54	54			76	41	56.8	61	.08				1200
19	.64	.98	1.62	.94	.94	1.88	.51	.50	1.01	.44	.39	.83	71	61	60	59	63	54	52	52			73	37	55.0	66	1.06				1440
20	.69	.98	1.67	.95	.95	1.90	.57	.52	1.09	.46	.41	.87	53	58	59	59	48	50	53	53			79	37	57.2	62	1.14				0820
21	.66	.97	1.63	.94	.92	1.86	.51	.50	1.01	.45	.39	.84	61	57	57	58	59	51	51	51			85	37	59.6	59	.68				1100
22	.64	.96	1.60	.94	.92	1.86	.52	.50	1.02	.44	.39	.83	72	64	60	59	64	55	53	51			79	41	61.8	60	1.02				1450
23	.64	.96	1.60	.93	.91	1.84	.49	.48	.97	.42	.38	.80	71	64	61	60	65	57	54	53			76	44	61.1	59	1.64				1440
24	.62	.96	1.58	.93	.91	1.84	.51	.50	1.01	.45	.38	.81	71	62	59	59	63	56	54	54			77	39	59.0	61	.93				1440
25	.71	1.02	1.73	1.00	1.06	2.06	.51	.48	.99	.41	.37	.78	61	59	59	59	59	54	54	53	.02	.02	68	47	55.9	64	1.55				1105
26	.68	.99	1.67	.96	.94	1.90	.53	.49	1.02	.44	.39	.83	50	55	56	58	45	48	51	51		1.26A	73	34	51.6	67	.95				0805
27	.64	.97	1.61	.93	.87	1.80	1.03	.73	1.76	.88	.61	1.49	66	59	56	56	49	51	53	52		1.55A	76	35	53.8	67	.65				0820
28	.65	.95	1.60	.93	.86	1.79	1.21	1.26	2.47	1.11	.93	2.04	55	53	51	56	52	51	53	51	T	1.40A	76	34	56.8	61	.65				1130
29	.60	.95	1.55	.91	.86	1.77	1.30	1.38	2.68	1.21	1.09	2.30	66	60	57	57	54	54	54	54		1.40A	70	30	55.4	58	.35				0855
30	.63	.95	1.58	.90	.85	1.75	1.28	1.39	2.67	1.24	1.12	2.36	66	60	58	58	60	56	55	54			68	31	50.2	65	1.43				1625
31	.64	.95	1.59	.91	.89	1.80	1.25	1.36	2.61	1.21	1.06	2.27	62	58	58	58	60	54	54	54	.01	.01	76	42	56.2	62	.47				1140
SUMS 1-10																					.21	.21									
SUMS 11-20																					.00	.00									
SUMS 21-31																					.03	.23 5.61A									
SUMS Month																					.24	.24 5.61A									
MEANS 1-10	.85	1.16	2.02	1.16	1.18	2.34	.58	.56	1.14	.56	.47	1.02	67.6	64.1	63.1	62.4	62.1	56.0	54.8	54.1			85.5	49.1	66.8	64.6	.80				
MEANS 11-20	.66	1.04	1.72	1.03	1.09	2.12	.55	.52	1.07	.48	.42	.90	68.2	62.3	60.8	60.1	62.9	55.9	53.9	53.8			79.5	43.0	60.6	62.5	.97				
MEANS 21-31	.65	.97	1.61	.93	.91	1.84	.83	.82	1.65	.75	.65	1.40	63.7	59.2	57.4	58.0	57.3	53.4	53.3	52.5			74.7	39.4	56.5	62.1	.92				
MEANS Month	.72	1.05	1.78	1.04	1.06	2.09	.66	.64	1.30	.60	.52	1.12	66.3	61.7	60.4	60.1	60.4	55.0	54.0	53.5			79.7	43.7	61.1	63.0	.90				

Table 29. Soil moisture and temperature and related factors.

M E A D O W S E P T E M B E R 1 9 5 2

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE MEADOW MONTH SEPTEMBER 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.62	.94	1.56	.89	.84	1.73	1.21	1.31	2.52	1.16	1.01	2.17	58	56	58	58	55	51	53	53	.01	.01	77	36	55.0	66	.83				1035
2	.56	.91	1.47	.85	.80	1.65	1.16	1.26	2.42	1.12	.96	2.08	69	59	57	56	59	52	51	50			82	37	59.2	61	.79				1450
3	.61	.91	1.52	.85	.82	1.67	1.16	1.25	2.41	1.12	.95	2.07	53	56	57	57	51	51	51	51			76	46	59.1	71	.35				0735
4	.61	.91	1.52	.86	.80	1.66	1.15	1.23	2.38	1.10	.93	2.03	52	53	55	56	50	49	51	51	T	T	80	39	57.8	56	.28				0920
5	.58	.89	1.47	.83	.78	1.61	1.11	1.20	2.31	1.08	.91	1.99	59	57	56	55	54	51	50	51			66	44	53.7	72	.76				1340
6	.62	.91	1.53	.85	.80	1.65	1.11	1.19	2.30	1.06	.90	1.96	62	57	57	57	57	53	53	52	.08	.08	69	45	54.7	79	.73				1210
7	.69	.98	1.67	.95	.98	1.93	1.12	1.19	2.31	1.06	.89	1.95	54	54	55	55	53	51	52	53			63	36	50.3	65	1.44				1030
8	.71	.99	1.70	.94	.93	1.87	1.10	1.16	2.26	1.06	.87	1.93	51	51	52	52	51	49	51	51	.03	.03	59	34	46.2	86	1.08				1110
9	.81	1.10	1.91	1.02	1.13	2.15	1.31	1.22	2.53	1.06	.87	1.93	58	56	55	55	51	51	51	51	.32	.32	56	47	51.2	88	.10				1015
10	.86	1.13	1.99	1.06	1.15	2.21	1.23	1.23	2.46	1.06	.87	1.93	55	54	54	55	54	51	51	51	T	1.89A	68	45	54.8	79	.17				1010
11	.89	1.12	2.01	1.05	1.10	2.15	1.19	1.21	2.40	1.06	.88	1.94	47	51	51	51	47	48	49	48	T	1.05A	76	41	55.7	70	.57				0750
12	.89	1.10	1.99	1.03	1.03	2.06	1.46	1.50	2.96	1.37	1.29	2.66	53	54	55	55	54	54	53	52	.08	.08	60	35	51.5	69	1.34				1330
13	.88	1.11	1.99	1.02	1.00	2.02	1.34	1.43	2.77	1.31	1.19	2.50	65	57	54	54	55	52	51	52			66	29	46.0	68	1.02				1535
14	.87	1.07	1.94	1.02	.95	1.97	1.31	1.40	2.71	1.28	1.15	2.43	58	51	50	51	53	48	48	49			74	29	49.2	67	.48				1235
15	.84	1.05	1.89	1.00	.90	1.90	1.25	1.36	2.61	1.25	1.11	2.36	62	53	51	52	54	48	48	48			78	31	52.3	66	.16				1320
16	.81	1.03	1.84	.98	.88	1.86	1.22	1.33	2.55	1.21	1.07	2.28	60	53	52	52	54	48	48	48			79	34	54.9	64	.60				1240
17	.81	1.02	1.83	.97	.87	1.84	1.21	1.30	2.51	1.19	1.04	2.23	55	53	53	54	51	48	49	49			82	41	58.0	67	.75				1030
18	.80	1.01	1.81	.97	.86	1.83	1.18	1.28	2.46	1.17	1.01	2.18	59	54	53	54	54	48	48	48			85	41	60.8	64	.65				1125
19	.77	.99	1.76	.95	.85	1.80	1.17	1.26	2.43	1.14	.98	2.12	58	54	54	55	54	49	51	50			84	43	60.6	66	.82				1050
20	.78	.99	1.77	.95	.83	1.78	1.15	1.25	2.40	1.13	.97	2.10	50	55	55	56	47	49	51	51			81	40	59.6	59	.95				0830
21	.74	.98	1.72	.94	.83	1.77	1.12	1.22	2.34	1.11	.95	2.06	60	54	54	55	55	49	50	50			81	43	61.0	55	.95				1155
22	.74	.98	1.72	.93	.84	1.77	1.12	1.21	2.33	1.11	.94	2.05	45	51	53	53	43	47	50	50			84	35	55.4	68	.44				0805
23	.73	.96	1.69	.92	.82	1.74	1.09	1.19	2.28	1.09	.93	2.02	47	51	53	54	44	46	48	48			84	35	55.6	64	.53				0910
24	.72	.95	1.67	.92	.81	1.73	1.10	1.17	2.27	1.09	.92	2.01	44	50	51	52	42	46	48	47			86	37	57.3	64	.48				0730
25	.70	.95	1.65	.90	.82	1.72	1.07	1.17	2.24	1.07	.90	1.97	47	50	51	51	45	47	48	48			88	38	59.4	62	.51				0910
26	.69	.94	1.63	.90	.80	1.70	1.02	1.15	2.17	1.06	.89	1.95	53	52	53	54	51	49	50	50			85	44	65.3	52	.13				0950
27	.66	.97	1.63	.88	.79	1.67	.99	1.13	2.12	1.06	.87	1.93	51	53	54	54	50	49	50	49			70	46	56.8	61	2.07				1000
28	.64	.92	1.56	.87	.78	1.65	.97	1.10	2.07	1.05	.86	1.91	51	51	52	54	49	48	49	49			73	39	53.6	69	1.21				1020
29	.65	.91	1.56	.86	.78	1.64	.96	1.09	2.05	1.04	.85	1.89	46	50	51	52	45	47	49	48			74	37	55.6	67	.92				0915
30	.65	.91	1.56	.86	.77	1.63	.95	1.07	2.02	1.02	.85	1.87	43	49	50	51	42	46	48	48			72	35	51.6	69	1.30				0850
31																															
SUMS 1-10																					.44	.44 1.89A									
SUMS 11-20																					.08	.08 1.05A									
SUMS 21-31																					.00	.00									
SUMS Month																					.52	.52 2.94A									
MEANS 1-10	.67	.97	1.63	.91	.90	1.81	1.17	1.22	2.39	1.09	.92	2.00	57.1	55.3	55.6	55.6	53.5	50.9	51.4	51.4			69.6	40.9	54.2	72.3	.65				
MEANS 11-20	.83	1.05	1.88	.99	.93	1.92	1.25	1.33	2.58	1.21	1.07	2.28	56.7	53.5	52.8	53.4	52.3	49.2	49.6	49.5			76.5	36.4	54.8	65.8	.70				
MEANS 21-31	.69	.95	1.64	.90	.80	1.70	1.04	1.15	2.19	1.07	.90	1.97	48.7	51.1	52.2	53.0	46.6	47.4	49.0	48.7			79.7	38.9	57.0	62.9	---				
MEANS Month	.73	.99	1.72	.93	.88	1.81	1.15	1.24	2.39	1.12	.96	2.08	54.1	53.3	53.5	54.0	50.8	49.2	50.0	49.9			75.3	38.7	55.3	67.0	.67				

Table 30. Soil moisture and temperature and related factors

M E A D O W O C T O B E R 1 9 5 2

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE MEADOW MONTH OCTOBER 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY				TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)				(Hours)
1	.64	.90	1.54	.85	.76	1.61	.94	1.05	1.99	1.00	.83	1.85	43	49	50	50	42	45	48	48		1.05A	77	35	52.2	69	.10				0900
2	.62	.90	1.52	.85	.75	1.60	1.24	1.29	2.53	1.17	1.01	2.18	47	47	49	51	46	47	48	48			77	32	52.1	68	.72				1030
3	.58	.88	1.46	.84	.75	1.59	1.17	1.24	2.41	1.13	.96	2.09	59	51	50	51	51	47	47	47			76	34	50.6	65	.71				1340
4	.58	.88	1.46	.83	.76	1.59	1.14	1.21	2.35	1.11	.94	2.05	58	51	50	50	49	47	47	47			73	27	46.6	62	.38				1635
5	.58	.87	1.45	.82	.75	1.57	1.13	1.22	2.35	1.10	.93	2.03	49	45	47	50	44	42	45	46			75	27	47.0	68	.38				1145
6	.59	.87	1.46	.82	.75	1.57	1.13	1.19	2.32	1.10	.92	2.02	39	45	47	50	38	42	45	46			78	29	48.4	71	.48				0820
7	.56	.86	1.42	.81	.75	1.56	1.09	1.19	2.28	1.08	.90	1.98	56	47	46	47	47	42	42	43			79	29	48.7	69	.38				1420
8	.59	.87	1.46	.81	.75	1.56	1.09	1.17	2.26	1.07	.89	1.96	46	44	45	47	43	42	42	43			75	32	48.0	69	.10				1135
9	.59	.87	1.46	.81	.74	1.55	1.08	1.16	2.24	1.06	.88	1.94	43	45	47	49	42	42	45	45			73	34	50.3	69	.31				0955
10	.58	.87	1.45	.81	.74	1.55	1.06	1.15	2.21	1.06	.87	1.93	47	45	46	49	44	42	49	46			75	33	49.8	76	.61				1120
11	.60	.87	1.47	.80	.74	1.54	1.05	1.13	2.18	1.06	.86	1.92	41	45	47	48	40	42	45	45			70	34	49.0	77	.24				0940
12	.57	.86	1.43	.80	.74	1.54	1.03	1.12	2.15	1.06	.87	1.93	41	43	44	47	41	42	42	42			71	32	47.7	71	.63				1035
13	.58	.87	1.45	.80	.73	1.53	1.02	1.11	2.13	1.03	.85	1.88	39	45	47	50	39	42	45	45			--	--	--	67	.62				0810
14	.56	.85	1.41	.79	.73	1.52	.99	1.09	2.08	1.02	.84	1.86	47	43	43	44	41	39	41	42			61	22	37.6	70	.75				1600
15	.57	.86	1.43	.79	.73	1.52	1.00	1.08	2.08	1.02	.83	1.85	36	30	41	44	35	36	40	42			57	23	37.8	69	.00				1110
16	.56	.85	1.41	.79	.73	1.52	.98	1.07	2.05	1.01	.82	1.83	47	43	42	43	42	39	39	40			66	28	42.2	71	.85				1635
17	.55	.84	1.39	.78	.72	1.50	.97	1.06	2.03	.99	.81	1.80	48	43	41	43	42	39	39	39			70	27	42.5	76	.26				1605
18	.59	.85	1.44	.78	.71	1.49	.98	1.06	2.04	.99	.81	1.80	38	39	39	43	36	36	39	39			71	27	43.2	78	.16				1205
19	.54	.84	1.38	.77	.72	1.49	.97	1.06	2.03	.98	.80	1.78	47	41	41	42	41	38	39	39			65	29	43.6	79	.37				1440
20	.57	.84	1.41	.78	.73	1.51	.97	1.06	2.03	.98	.80	1.78	50	43	43	42	43	40	40	39		1.40A	67	32	44.8	81	.14				1500
21	.59	.86	1.45	.80	.74	1.54	1.41	1.46	2.87	1.37	1.24	2.61	42	42	42	43	48	45	43	42	T	1.40A	70	37	51.0	72	.48				1715
22	.57	.86	1.43	.79	.73	1.52	1.37	1.43	2.80	1.31	1.19	2.50	46	42	42	43	42	42	42	42			69	30	44.1	80	.45				1305
23	.57	.86	1.43	.79	.73	1.52	1.34	1.41	2.75	1.29	1.15	2.44	36	39	41	43	36	39	41	42			68	30	45.0	80	.06				1025
24	.60	.86	1.46	.80	.75	1.55	1.32	1.39	2.71	1.27	1.12	2.39	40	41	41	42	40	39	41	41	.02	.02	59	31	45.0	75	1.00				1020
25	.59	.87	1.46	.80	.74	1.54	1.30	1.36	2.66	1.25	1.09	2.34	36	38	39	42	36	38	39	40			61	26	37.4	79	.24				1005
26	.60	.86	1.46	.79	.72	1.51	1.28	1.34	2.62	1.22	1.05	2.27	36	36	38	41	34	36	39	39			60	22	36.0	79	.45				1250
27	.57	.86	1.43	.79	.72	1.51	1.26	1.33	2.59	1.20	1.03	2.23	31	35	36	39	32	35	38	39			64	23	35.5	80	.21				1150
28	.60	.86	1.46	.79	.71	1.50	1.25	1.31	2.56	1.18	1.01	2.19	39	37	37	39	34	35	38	38			61	22	36.1	80	.28				1610
29	.60	.85	1.45	.78	.70	1.48	1.24	1.30	2.54	1.18	1.00	2.18	35	36	36	38	33	34	36	36			48	30	40.0	83	.17				1125
30	.66	.89	1.55	.81	.78	1.59	1.42	1.39	2.81	1.20	1.01	2.21	39	39	39	41	39	39	39	39	.34	.34	48	32	41.2	90	--				0840
31	.75	.96	1.71	.91	.83	1.74	1.42	1.43	2.85	1.25	1.06	2.31	38	37	37	39	38	36	36	36	.01	.01	44	32	36.2	89	--				1410
SUMS 1-10																					-	1.05A									
SUMS 11-20																					-	1.40A									
SUMS 21-31																					.37	.37 1.40A									
SUMS Month																					.37	.37 3.85A									
MEANS 1-10	.59	.88	1.47	.82	.75	1.58	1.11	1.19	2.29	1.09	.91	2.00	48.7	46.8	47.7	49.4	44.6	43.8	45.8	45.9			75.8	31.2	49.4	68.4	.42				
MEANS 11-20	.57	.85	1.42	.79	.73	1.52	1.00	1.08	2.08	1.01	.83	1.84	43.4	42.3	42.8	44.6	40.0	39.3	40.9	41.2			66.4	28.2	43.2	73.9	.40				
MEANS 21-31	.62	.54	1.48	.80	.74	1.54	1.42	1.38	2.70	1.25	1.09	2.33	37.7	38.4	38.9	40.9	37.4	38.0	39.3	39.4			59.3	28.6	40.3	80.9	.42				
MEANS Month	.59	.87	1.46	.81	.74	1.55	1.15	1.22	2.37	1.12	.95	2.07	43.1	42.4	43.0	44.8	40.6	40.3	41.9	42.1			66.9	29.5	44.2	74.6	.41				

Table 31. Soil moisture and temperature and related factors

M E A D O W A P R I L 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE MEADOW MONTH APRIL 195 3

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground water Tier 2			TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	Ft.			(Hours)
1	1.45	1.65	3.10	1.64	1.63	3.27	1.49	1.67	3.16	1.51	1.47	2.98	38	34	34	34	36	32	32	32	.40	.40	41	21	29.0	74		--			1305
2	1.45	1.65	3.10	1.64	1.63	3.27	1.44	1.74	3.18	1.52	1.48	3.00	36	34	34	34	35	32	32	32			47	19	30.9	70		--			1305
3	1.44	1.69	3.13	1.66	1.64	3.30	1.40	1.73	3.13	1.71	1.47	3.18	34	34	34	35	33	32	32	32	T	T	44	20	30.8	85		--			1310
4	1.42	1.69	3.11	1.68	1.64	3.32	1.39	1.72	3.11	1.74	1.47	3.21	38	34	34	34	36	33	32	32			51	24	37.9	84		--			1250
5	1.45	1.70	3.15	1.68	1.65	3.33	1.44	1.74	3.18	1.75	1.44	3.17	42	38	36	36	40	35	34	34	.14	.14	49	35	40.6	89		--			1400
6	1.45	1.71	3.16	1.69	1.67	3.36	1.43	1.74	3.17	1.74	1.45	3.19	39	37	36	36	37	34	34	34	.07	.07	40	32	36.8	92		--			1325
7	1.45	1.71	3.16	1.69	1.66	3.35	1.44	1.74	3.18	1.72	1.43	3.15	38	36	36	36	37	35	35	34	.07	.07	44	32	38.6	59		--			1310
8	1.44	1.70	3.14	1.69	1.63	3.32	1.42	1.73	3.15	1.69	1.47	3.16	36	35	35	36	36	34	34	34			44	33	38.7	40		--			1315
9	1.41	1.71	3.12	1.69	1.63	3.32	1.40	1.72	3.12	1.70	1.45	3.15	39	36	35	36	38	34	34	34			43	23	34.3	48		1.29			1325
10	1.39	1.71	3.10	1.69	1.68	3.37	1.39	1.64	3.03	1.70	1.44	3.14	40	35	35	35	39	34	34	34			45	20	33.0	59		1.16			1355
11	1.39	1.70	3.09	1.69	1.68	3.37	1.38	1.62	3.00	1.72	1.44	3.16	36	36	35	35	36	34	34	34	T	T	41	24	33.5	77	.60	1.23			1550
12	1.39	1.70	3.09	1.69	1.66	3.35	1.39	1.65	3.04	1.72	1.44	3.16	37	36	35	35	36	34	34	34	.06	.06	39	26	34.0	80	1.06	1.06			1605
13	1.37	1.69	3.06	1.68	1.65	3.33	1.38	1.62	3.00	1.69	1.45	3.14	39	36	35	35	38	34	34	33	T	T	42	26	35.2	74	2.22	1.26			1315
14	1.40	1.69	3.09	1.67	1.65	3.32	1.38	1.62	3.00	1.70	1.46	3.16	33	35	36	36	32	34	35	35	.13	.13	44	20	30.6	76	.64	1.39			1035
15	1.37	1.67	3.04	1.66	1.59	3.25	1.36	1.57	2.93	1.57	1.47	3.04	44	36	35	36	42	34	34	34	T	T	53	24	38.5	65	1.04	1.15			1350
16	1.35	1.65	3.00	1.65	1.61	3.26	1.36	1.54	2.90	1.57	1.49	3.06	47	39	37	36	45	37	35	35			57	29	43.5	68	.95	1.30			1355
17	1.34	1.62	2.96	1.64	1.63	3.27	1.35	1.53	2.88	1.52	1.49	3.01	48	40	38	38	48	38	36	36			57	31	43.7	51	.88	1.42			1345
18	1.34	1.62	2.96	1.65	1.64	3.29	1.36	1.54	2.90	1.50	1.55	3.05	41	40	39	39	41	39	38	37	.03	.03	51	29	38.2	86	.89	1.33			1330
19	1.34	1.59	2.93	1.64	1.63	3.27	1.34	1.51	2.85	1.46	1.54	3.00	48	40	38	38	47	38	36	36	T	T	66	26	46.4	65	1.15	1.97			1340
20	1.32	1.59	2.91	1.63	1.64	3.27	1.34	1.51	2.85	1.44	1.49	2.93	49	43	41	40	48	42	39	38			66	35	50.5	67	1.31	1.53			1345
21	1.33	1.59	2.92	1.59	1.63	3.22	1.34	1.50	2.84	1.42	1.42	2.84	46	43	42	41	44	40	40	39	T	T	58	37	47.9	80	.47	1.53			1320
22	1.33	1.58	2.91	1.57	1.63	3.20	1.33	1.49	2.82	1.41	1.40	2.81	50	54	41	41	48	42	40	39			58	36	46.9	72	1.18	1.59			1345
23	1.42	1.65	3.07	1.63	1.62	3.25	1.54	1.66	3.20	1.51	1.44	2.95	48	44	43	41	48	42	41	39	.45	.45	53	37	45.0	85	1.17	.62			1415
24	1.40	1.66	3.06	1.63	1.62	3.25	1.50	1.68	3.18	1.54	1.45	2.99	52	44	43	41	52	42	41	39	.03	.03	58	33	44.4	70	.74	.89			1310
25	1.37	1.65	3.02	1.63	1.61	3.24	1.41	1.65	3.06	1.54	1.47	3.01	50	44	43	42	51	43	42	41			67	28	45.6	67	.95	1.07			1355
26	1.36	1.65	3.01	1.64	1.61	3.25	1.40	1.65	3.05	1.56	1.49	3.05	51	47	44	43	51	45	42	42	.01	.01	57	42	48.1	86	.69	1.10			1325
27	1.43	1.67	3.10	1.64	1.62	3.26	1.54	1.69	3.23	1.56	1.51	3.07	50	46	44	44	51	45	43	42	.29	.29	56	44	49.4	95	.43	.43			1335
28	1.44	1.68	3.12	1.65	1.65	3.30	1.53	1.71	3.24	1.57	1.53	3.10	44	44	44	44	45	44	43	42	1.11	1.11	46	38	40.3	93	.85	.26			1310
29	1.41	1.68	3.09	1.64	1.64	3.28	1.51	1.73	3.24	1.59	1.51	3.10	51	44	43	43	51	43	42	42	.22	.22	53	34	42.4	78	.64	.60			1315
30	1.39	1.68	3.07	1.65	1.63	3.28	1.49	1.74	3.23	1.61	1.53	3.14	50	44	44	43	49	44	43	42	.03	.03	49	31	39.4	84	1.39	.79			1705
31																															
SUMS 1-10																					.68	.68									
SUMS 11-20																					.22	.22									
SUMS 21-31																					2.14	2.14									
SUMS Month																					3.04	3.04									
MEANS 1-10	1.44	1.69	3.13	1.68	1.65	3.32	1.42	1.72	3.14	1.68	1.46	3.13	38.0	35.3	34.9	35.2	36.7	33.5	33.0	33.2			44.8	25.9	35.0	70.0	—	-			
MEANS 11-20	1.36	1.65	3.01	1.66	1.64	3.30	1.36	1.57	2.94	1.59	1.48	3.07	42.2	38.1	36.9	36.8	41.3	36.4	35.5	35.2			51.6	27.0	39.4	70.8	1.97	1.36			
MEANS 21-31	1.39	1.65	3.04	1.63	1.63	3.25	1.46	1.65	3.11	1.53	1.48	3.01	49.2	44.3	43.1	42.3	49.0	43.0	41.7	40.7			65.5	36.0	45.2	80.8	.85	.89			
MEANS Month	1.39	1.66	3.05	1.65	1.64	3.29	1.41	1.64	3.06	1.50	1.47	3.07	43.1	39.2	38.3	38.1	42.3	37.6	36.8	36.3			50.1	29.5	39.7	73.8	.96	1.13			

Agricultural Experiment Station, University of Minnesota

Table 32. Soil moisture and temperature and related factors

M E A D O W M A Y 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE MEADOW MONTH MAY 1953

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground water Tier 3			TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	ft.			(Hours)
1	1.39	1.68	3.07	1.65	1.64	3.29	1.47	1.74	3.21	1.63	1.55	3.18	44	42	42	42	45	42	42	42	.05	.05	47	33	39.9	84	.95	.74			1325
2	1.41	1.68	3.09	1.66	1.63	3.29	1.43	1.73	3.16	1.65	1.57	3.22	45	41	41	42	45	41	42	42	T	T	54	29	41.1	72	.71	.89			1110
3	1.35	1.67	3.02	1.65	1.63	3.28	1.36	1.64	3.00	1.76	1.62	3.38	55	44	42	41	54	43	42	41			63	27	44.8	64	1.15	1.21			1355
4	1.34	1.65	2.99	1.64	1.67	3.31	1.34	1.59	2.93	1.68	1.63	3.31	57	45	43	43	57	45	43	42			74	29	50.9	66	.53	1.39			1330
5	1.34	1.61	2.95	1.64	1.71	3.35	1.32	1.55	2.87	1.52	1.69	3.21	60	49	46	44	59	47	43	42			78	33	54.8	62	1.26	1.54			1335
6	1.34	1.59	2.93	1.56	1.70	3.26	1.29	1.51	2.80	1.48	1.54	3.02	60	50	48	46	60	48	46	44			80	34	57.5	59	.91	1.66			--
7	1.37	1.62	2.99	1.58	1.66	3.24	1.38	1.56	2.94	1.50	1.45	2.95	49	48	47	47	50	48	47	46	.13	.13	52	39	44.6	90	1.22	1.53			1355
8	1.39	1.63	3.02	1.62	1.62	3.24	1.38	1.56	2.94	1.59	1.57	3.16	50	45	44	44	53	45	45	44	.14	.14	51	34	40.1	82	1.36	1.23			1315
9	1.43	1.66	3.09	1.63	1.62	3.25	1.39	1.57	2.96	1.59	1.57	3.16	49	44	44	44	50	46	45	44	.13	.13	49	30	38.5	81	1.33	1.09			1350
10	1.44	1.65	3.09	1.61	1.62	3.23	1.37	1.56	2.93	1.58	1.56	3.14	51	44	43	43	53	45	44	43	.08	.08	55	32	40.7	81	1.08	1.18			1345
11	1.43	1.63	3.06	1.61	1.62	3.23	1.35	1.53	2.88	1.53	1.51	3.04	53	45	44	44	54	46	45	44	.02	.02	61	28	44.5	67	.80	1.38			1300
12	1.41	1.60	3.01	1.59	1.62	3.21	1.31	1.50	2.81	1.46	1.45	2.91	57	46	44	44	57	47	45	44			65	28	47.2	60	.92	1.57			1310
13	1.40	1.57	2.97	1.54	1.62	3.16	1.28	1.47	2.75	1.43	1.36	2.79	58	48	45	44	57	47	45	44			69	28	50.2	58	1.19	1.73			1310
14	1.39	1.55	2.94	1.53	1.57	3.10	1.25	1.44	2.69	1.40	1.32	2.72	58	50	48	47	58	49	47	45			68	38	51.2	72	1.14	1.84			1347
15	1.39	1.55	2.94	1.53	1.54	3.07	1.23	1.43	2.66	1.38	1.30	2.68	62	52	49	47	61	50	48	47	.03	.03	68	39	53.2	65	1.15	1.90			1320
16	1.38	1.53	2.91	1.50	1.51	3.01	1.22	1.40	2.62	1.36	1.27	2.63	58	51	49	48	58	51	48	47			68	35	51.9	72	.88	1.99			1245
17	1.38	1.52	2.90	1.49	1.50	2.99	1.20	1.39	2.59	1.34	1.26	2.60	57	50	50	49	56	50	48	48	T	T	70	41	54.9	66	.81	2.08			1030
18	1.37	1.50	2.87	1.48	1.48	2.96	1.18	1.36	2.54	1.31	1.22	2.53	61	53	51	50	61	52	50	48	.04	.04	67	40	53.2	77	1.20	2.16			1315
19	1.44	1.56	3.00	1.52	1.50	3.02	1.31	1.44	2.75	1.33	1.24	2.57	57	53	51	50	56	52	51	49	.25	.25	57	47	51.9	67	.46	2.07			0955
20	1.42	1.54	2.96	1.50	1.49	2.99	1.27	1.42	2.69	1.33	1.24	2.57	50	50	50	50	52	51	51	50	.01	.01	51	29	42.2	68	3.73	1.99			1100
21	1.39	1.50	2.89	1.47	1.47	2.94	1.21	1.38	2.59	1.31	1.22	2.53	56	50	49	48	55	50	49	48	T	T	57	29	39.8	81	1.65	2.07			1345
22	1.45	1.55	3.00	1.50	1.49	2.99	1.33	1.43	2.76	1.34	1.23	2.57	55	49	47	47	54	48	48	48	.22	.22	51	31	41.7	--	1.60	2.01			1310
23	1.44	1.53	2.97	1.49	1.48	2.97	1.28	1.41	2.69	1.34	123	2.57	50	46	46	48	50	48	48	48	T	T	62	30	47.7	--	.81	1.98			0945
24	1.56	1.58	3.14	1.48	1.45	2.93	1.53	1.43	2.96	1.31	1.22	2.53	48	50	50	49	49	49	49	48	.23	.23	49	42	45.5	89	1.06	2.10			0925
25	1.48	1.58	3.06	1.50	1.50	3.00	1.39	1.44	2.83	1.36	1.26	2.62	48	46	46	46	49	48	48	48	T	T	52	42	46.1	84	.71	1.90			1105
26	1.60	1.64	3.24	1.53	1.50	3.03	1.52	1.50	3.02	1.36	1.25	2.61	49	47	46	46	49	48	47	47	.26	.26	57	41	47.2	82	.98	--			1310
27	1.66	1.74	3.40	1.67	1.61	3.28	1.54	1.69	3.23	1.54	1.42	2.96	56	50	47	47	54	48	48	47	.58	.58	58	36	46.3	81	1.11	.63			1325
28	1.59	1.74	3.33	1.67	1.68	3.35	1.40	1.61	3.01	1.54	1.43	2.97	63	52	49	48	59	50	48	47	T	T	72	32	52.6	67	.24	1.17			1330
29	1.50	1.71	3.21	1.67	1.68	3.35	1.35	1.53	2.88	1.47	1.43	2.90	63	56	52	50	61	53	50	48			65	44	54.5	76	2.03	1.45			--
30	1.55	1.74	3.29	1.68	1.68	3.36	1.40	1.55	2.95	1.52	1.44	2.96	55	53	52	51	55	53	51	50	.21	.21	53	35	46.3	72	1.14	1.17			1350
31	1.52	1.75	3.27	1.67	1.68	3.35	1.37	1.53	2.90	1.47	1.43	2.90	52	49	49	50	51	48	49	48			71	31	52.8	70	.51	1.42			0955
SUMS 1-10																					.53	.53									
SUMS 11-20																					.35	.35									
SUMS 21-31																					1.50	1.50									
SUMS Month																					2.38	2.38									
MEANS 1-10	1.38	1.64	3.02	1.62	1.65	3.27	1.37	1.60	2.97	1.60	1.58	3.17	50.0	45.2	44.0	43.6	52.6	45.0	43.9	43.0			60.3	32.0	45.3	74.2	1.05	1.25			
MEANS 11-20	1.40	1.56	2.96	1.53	1.54	3.07	1.26	1.44	2.70	1.39	1.32	2.70	57.1	49.8	48.1	47.3	57.0	49.5	47.8	46.6			64.4	35.3	50.0	67.2	1.23	1.87			
MEANS 21-31	1.52	1.64	3.16	1.58	1.56	3.14	1.39	1.50	2.89	1.41	1.32	2.74	54.1	49.8	48.4	48.2	53.2	49.4	48.6	47.9			58.8	35.7	52.0	78.0	1.08	1.59			
MEANS Month	1.44	1.61	3.05	1.58	1.59	3.16	1.34	1.51	2.86	1.46	1.40	2.87	53.7	48.3	46.9	46.4	54.3	48.0	46.8	45.9			61.1	34.4	47.5	72.9	1.12	1.67			

Table 33. Soil moisture and temperature and related factors

M E A D O W J U N E 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE MEADOW MONTH JUNE 195 8

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground water Tier 2			TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	Ft.			(Hours)
1	1.56	1.76	3.32	1.69	1.70	3.39	1.39	1.56	2.95	1.54	1.45	2.99	68	57	54	51	61	54	51	50	.26	.26	71	39	59.5	71	.83	1.24			1330
2	1.56	1.76	3.32	1.68	1.69	3.37	1.41	1.56	2.97	1.52	1.46	2.98	62	58	56	53	58	54	52	51	.14	.14	62	48	55.7	78	.82	1.19			1315
3	1.53	1.73	3.26	1.67	1.68	3.35	1.39	1.53	2.91	1.47	1.44	2.91	58	54	52	51	56	52	51	50	.03	.03	57	41	50.9	--	.74	1.41			1310
4	1.68	1.76	3.44	1.68	1.69	3.37	1.56	1.70	3.26	1.59	1.49	3.08	57	53	52	51	54	51	50	49	.37	.37	59	46	52.2	--	.90	.45			1315
5	1.68	1.77	3.45	1.71	1.71	3.42	1.54	1.71	3.25	1.61	1.49	3.10	57	52	51	51	54	51	50	50	.04	.04	64	46	55.0	74	.26	.82			1005
6	1.57	1.76	3.33	1.71	1.75	3.46	1.39	1.59	2.98	1.58	1.49	3.07	62	56	53	51	58	53	51	50	T	T	67	45	55.1	74	.61	1.22			1300
7	1.67	1.77	3.44	1.71	1.73	3.44	1.53	1.70	3.23	1.58	1.49	3.07	54	53	52	51	53	51	51	49	.37	.37	53	48	50.6	92	.46	.32			1415
8	1.64	1.77	3.41	1.72	1.74	3.46	1.52	1.72	3.24	1.61	1.54	3.15	56	51	51	50	55	51	51	50	.13	.13	56	44	50.2	76	.82	.74			1400
9	1.60	1.76	3.36	1.72	1.79	3.51	1.40	1.61	3.01	1.61	1.54	3.15	63	56	52	51	56	51	51	50	T	T	67	39	52.3	69	.52	1.19			1545
10	1.50	1.73	3.23	1.75	1.75	3.48	1.33	1.55	2.88	1.48	1.48	2.96	67	55	53	51	58	51	50	49			74	37	56.6	65	.87	1.48			1325
11	1.49	1.71	3.20	1.68	1.73	3.41	1.32	1.50	2.82	1.44	1.35	2.79	66	59	56	52	58	53	51	50			78	48	63.3	65	.31	1.69			1315
12	1.48	1.70	3.18	1.66	1.77	3.43	1.31	1.49	2.80	1.41	1.33	2.74	66	61	59	56	60	55	54	53			72	48	61.0	74	.97	1.81			1405
13	1.62	1.77	3.39	1.72	1.77	3.49	1.54	1.70	3.24	1.59	1.49	3.08	52	54	55	54	53	53	53	52	.67	.67	53	48	50.0	86	1.51	.60			1500
14	1.57	1.77	3.34	1.73	1.80	3.53	1.42	1.63	3.05	1.61	1.50	3.11	63	57	53	52	57	53	51	50			65	44	55.5	75	.76	1.13			1520
15	1.51	1.76	3.27	1.72	1.78	3.50	1.40	1.59	2.99	1.58	1.52	3.10	60	56	55	54	56	54	54	52	.01	.01	63	46	54.5	77	.82	1.32			1520
16	1.48	1.72	3.20	1.72	1.75	3.47	1.31	1.51	2.82	1.36	1.43	2.79	67	57	53	52	59	52	50	50			74	40	57.7	65	.28	1.55			1315
17	1.45	1.67	3.12	1.66	1.74	3.40	1.26	1.52	2.78	1.41	1.34	2.75	65	59	56	55	59	54	52	51			68	42	56.8	55	1.95	1.81			1315
18	1.42	1.65	3.07	1.63	1.68	3.31	1.21	1.42	2.63	1.36	1.28	2.64	65	56	55	54	59	53	51	51			63	35	49.7	69	1.16	1.97			1330
19	1.42	1.63	3.05	1.62	1.64	3.26	1.22	1.40	2.62	1.33	1.25	2.58	58	53	52	52	54	51	51	50			58	41	48.4	79	1.44	2.10			1320
20	1.46	1.68	3.14	1.64	1.66	3.30	1.35	1.45	2.80	1.34	1.24	2.58	48	50	51	52	49	50	50	50	.15	.15	59	41	49.5	72	.96	2.09			0800
21	1.42	1.65	3.07	1.62	1.64	3.26	1.26	1.41	2.67	1.32	1.21	2.53	57	50	50	51	52	49	49	49			66	38	52.5	70	.40	2.14			1120
22	1.37	1.60	2.97	1.57	1.63	3.20	1.17	1.34	2.51	1.28	1.17	2.45	65	56	53	51	59	52	51	51			69	42	55.8	67	1.94	2.25			1400
23	1.35	1.56	2.91	1.55	1.60	3.15	1.15	1.30	2.45	1.24	1.12	2.36	60	56	53	52	54	51	51	50	.02	.02	60	40	49.6	76	1.92	2.32			1405
24	1.39	1.60	2.99	1.56	1.59	3.15	1.25	1.33	2.58	1.24	1.12	2.36	56	53	51	51	52	51	51	50	.09	.09	61	46	52.8	80	1.73	2.37			1415
25	1.40	1.57	2.97	1.55	1.58	3.13	1.28	1.32	2.60	1.23	1.11	2.34	59	55	51	51	54	51	51	50	.09	.09	62	44	53.2	87	.04	2.40			1435
26	1.39	1.60	2.99	1.55	1.59	3.14	1.23	1.34	2.57	1.24	1.11	2.35	65	57	54	51	59	51	51	50	.06	.06	69	45	54.7	85	.62	2.41			1315
27	1.43	1.63	3.06	1.57	1.59	3.16	1.33	1.40	2.73	1.27	1.13	2.40	50	51	52	52	49	49	50	50	.15	.15	65	46	55.2	79	.26	2.43			0805
28	1.38	1.60	2.98	1.55	1.57	3.12	1.21	1.34	2.55	1.25	1.11	2.36	61	53	52	52	54	50	50	49			72	45	57.0	84	1.00	2.44			1000
29	1.43	1.68	3.11	1.62	1.61	3.23	1.34	1.45	2.79	1.30	1.15	2.45	68	58	55	53	60	52	51	50	.36	.36	70	53	60.0	72	.57	2.44			1320
30	1.38	1.64	3.02	1.58	1.59	3.17	1.41	1.38	2.79	1.28	1.14	2.42	66	59	56	55	60	54	52	51			66	48	57.3	72	.90	2.46			1335
31																															
SUMS 1-10																					1.34	1.34									
SUMS 11-20																					.86	.86									
SUMS 21-31																					.77	.77									
SUMS Month																					2.97	2.97									
MEANS 1-10	1.60	1.75	3.36	1.70	1.72	3.42	1.44	1.62	3.06	1.56	1.49	3.05	60.4	54.5	52.3	51.5	56.0	51.9	50.8	49.8			63.2	43.3	53.8	74.7	.68	1.01			
MEANS 11-20	1.49	1.71	3.20	1.59	1.73	3.32	1.33	1.52	2.86	1.44	1.37	2.82	61.0	56.2	54.5	53.3	56.4	52.8	51.7	50.0			65.3	43.3	54.6	71.6	1.02	1.61			
MEANS 21-31	1.39	1.61	3.01	1.57	1.60	3.17	1.26	1.36	2.62	1.26	1.14	2.40	60.7	54.8	52.7	51.9	55.2	51.0	50.7	50.0			66.0	44.7	54.8	77.0	1.14	2.37			
MEANS Month	1.49	1.69	3.19	1.62	1.68	3.30	1.35	1.50	2.83	1.42	1.33	2.76	60.7	55.2	53.2	52.1	55.9	51.9	51.1	50.2			64.8	43.8	54.4	74.4	.91	1.66			

Table 34. Soil moisture and temperature and related factors

M E A D O W J U L Y 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE MEADOW MONTH JULY 195 3

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground Water Depth Ft.			TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	Ft.			(Hours)
1	1.35	1.62	2.97	1.55	1.57	3.12	1.21	1.34	2.55	1.26	1.11	2.37	70	60	56	55	60	54	51	51	.08	.08	71	44	56.6	67	.82	2.46			1345
2	1.33	1.56	2.89	1.51	1.55	3.06	1.13	1.27	2.40	1.22	1.08	2.30	70	60	57	56	60	54	51	51			77	41	59.6	62	.82	2.47			1330
3	1.31	1.48	2.79	1.48	1.51	2.99	1.08	1.24	2.32	1.18	1.05	2.23	70	60	59	56	60	55	54	52			76	45	60.3	57	.82	2.48			1320
4	1.31	1.49	2.80	1.45	1.45	2.90	1.09	1.22	2.31	1.16	1.01	2.17	64	59	58	57	57	53	53	52			72	38	58.0	67	1.10	2.49			1320
5	1.30	1.48	2.78	1.43	1.43	2.86	1.01	1.17	2.16	1.14	.99	2.13	72	61	58	56	60	53	52	51			79	43	59.5	62	.63	2.51			--
6	1.30	1.46	2.76	1.42	1.40	2.82	1.01	1.15	2.16	1.13	.99	2.12	63	58	57	57	54	52	52	52			85	47	64.4	64	.13	2.53			1025
7	1.27	1.43	2.70	1.39	1.37	2.76	.93	1.09	2.02	1.10	.94	2.04	75	64	60	58	63	55	53	52			89	43	67.7	62	.74	2.54			1320
8	1.28	1.41	2.69	1.38	1.36	2.74	.99	1.10	2.09	1.09	.93	2.02	64	60	60	60	56	54	54	54			84	48	65.6	63	.91	2.57			1025
9	1.20	1.37	2.57	1.35	1.32	2.67	.89	1.01	1.90	1.05	.88	1.93	77	68	62	59	63	58	54	54			85	43	64.3	63	1.38	2.59			1730
10	1.24	1.37	2.61	1.34	1.30	2.64	.90	1.00	1.90	1.06	.88	1.94	71	61	59	59	62	56	54	54			90	50	68.9	60	.44	2.60			1115
11	1.21	1.35	2.56	1.32	1.29	2.61	.93	.99	1.92	1.04	.87	1.91	63	61	61	61	57	54	54	54			93	50	70.8	63	.92	2.63			0810
12	1.10	1.31	2.41	1.29	1.27	2.56	.86	.93	1.79	.98	.82	1.80	82	69	65	63	68	60	57	56			94	52	73.3	68	.59	2.68			1350
13	1.12	1.30	2.42	1.28	1.26	2.54	.91	.93	1.84	.97	.82	1.79	66	64	64	63	60	58	57	56			87	57	71.2	63		2.72			0845
14	1.13	1.30	2.43	1.28	1.22	2.50	.88	.91	1.79	.93	.79	1.72	70	68	65	64	63	60	59	57			74	51	64.9	72		2.75			1420
15	1.16	1.30	2.46	1.27	1.21	2.48	.87	.90	1.77	.92	.77	1.69	60	60	61	62	62	59	58	58		1.58A	72	46	57.9	69		2.78			1335
16							1.23	1.32	2.55	1.24	1.09	2.33					56	57	58	58		2.38A	80	41	61.0	66		2.83			0905
17							1.35	1.46	2.81	1.28	1.26	2.64					57	59	59	58		1.74A	84	44	64.6	65		2.88			0640
18							1.40	1.55	2.95	1.44	1.31	2.75					64	60	58	56			85	48	65.9	59					1340
19							1.30	1.41	2.71	1.33	1.20	2.53					55	56	59	58			78	43	61.0	62					0715
20	1.12	1.25	2.37	1.22	1.17	2.39	1.17	1.32	2.49	1.26	1.13	2.39	70	65	63	62	63	58	56	55			75	48	59.6	67					1155
21	1.08	1.23	2.26	1.20	1.10	2.30	1.09	1.24	2.33	1.20	1.04	2.24	81	70	65	63	65	60	59	56			80	43	61.5			3.05			1550
22																															
23																															
24																															
25																															
26																															
27																															
28																															
29																															
30																															
31																															
SUMS 1-10																					.08	.08									
SUMS 11-20																					.00	5.70A									
SUMS 21-31																					--	--									
SUMS Month																					.08	.08 5.70A									
MEANS 1-10	1.29	1.47	2.76	1.43	1.43	2.86	1.02	1.16	2.18	1.14	.99	2.12	69.6	61.1	58.6	57.3	59.5	54.4	52.8	52.3			80.8	44.2	62.5	62.7	.78	2.52			
MEANS 11-20	1.14	1.30	2.44	1.28	1.24	2.51	1.09	1.17	2.26	1.15	1.01	2.16	68.5	64.5	63.2	62.5	60.5	58.1	57.5	56.6			82.2	48.0	65.8	65.4	.76	2.75			
MEANS 21-31	--	--	--	--	--	--	--	--	--	--	--	--	—	—	—	—	—	—,	—	—			—	—	—	—	—	—			
MEANS Month	1.23	1.41	2.64	1.37	1.36	2.73	1.06	1.16	2.22	1.14	1.00	2.14	69.2	62.4	60.3	59.2	60.0	56.2	55.2	54.4			81.5	46.1	63.7	64.0	.77	2.62			

Table 35. Soil moisture and temperature and related factors

L A K E J U L Y 1 9 5 2

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE LAKE MONTH JULY 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground Water	Soil Moisture Avr 1-2 0-6	6-12	TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	Ft.			(Hours)
1	1.87	1.85	3.72	2.17	2.14	4.51	2.08	2.13	4.21	2.49	2.43	4.92	56	57	59	59	59	58	59	59							.86				
2																															
3																															
4																															
5																															
6																															
7	1.87	1.85	3.72	2.17	2.14	4.51	2.08	2.13	4.21	2.49	2.43	4.92	56	57	59	59	59	58	59	59									3.96	4.62	0930
8	1.84	1.85	3.69	2.18	2.16	4.34	2.12	2.07	4.19	2.51	2.45	4.96	66	62	60	59	71	61	59	59							.86		3.94	4.65	1410
9	1.89	1.85	3.74	2.19	2.16	4.35	2.12	1.94	4.06	2.50	2.43	4.93	62	61	61	60	63	60	60	60							.49		3.90	4.64	0950
10	1.88	1.99	3.87	2.19	2.18	4.37	2.08	1.88	3.96	2.49	2.44	4.93	70	66	62	61	74	64	61	60							.39		3.92	4.65	1425
11	1.93	1.95	3.88	2.18	2.15	4.33	2.28	1.95	4.23	2.49	2.43	4.92	62	64	63	61	65	63	63	62							1.41		4.06	4.62	0930
12	1.89	1.92	3.81	2.19	2.15	4.34	2.16	1.95	4.11	2.59	2.49	5.08	70	65	65	65	75	68	63	62							1.05		3.96	4.71	1640
13	1.89	1.91	3.80	2.17	2.16	4.33	2.10	2.04	4.14	2.61	2.52	5.13	63	64	64	63	70	63	63	63							1.46		3.97	4.72	1125
14	1.89	1.86	3.75	2.19	2.15	4.34	2.00	1.92	3.92	2.49	2.40	4.89	69	64	61	61	78	63	61	60							.76		3.84	4.62	1410
15	1.93	1.90	3.83	2.18	2.14	4.32	2.01	1.95	3.96	2.49	2.43	4.92	62	64	63	62	62	63	63	63							1.77		3.90	4.62	0810
16	1.89	1.84	3.73	2.04	2.15	4.19	1.96	2.20	4.16	2.49	2.40	4.89	68	65	62	61	74	65	61	61							2.61		3.94	4.54	1525
17	1.70	1.70	3.40	1.90	2.02	3.92	1.95	2.20	4.15	2.51	2.42	4.93	66	65	62	62	69	63	62	61			76	45	60.5	70	2.08		3.78	4.42	1510
18	1.84	1.79	3.63	1.90	2.16	4.06	1.92	2.20	4.12	2.49	2.43	4.92	67	64	62	60	69	63	61	60			78	39	61.1	68	.52	1.04	3.88	4.49	1820
19	1.81	1.75	3.56	1.98	2.13	4.11	1.93	2.20	4.13	2.49	2.43	4.92	62	62	62	61	66	61	61	60	.10	.10	75	51	61.7	74	1.09	1.00	3.84	4.52	1100
20	1.81	1.73	3.54	1.93	2.15	4.08	1.93	2.20	4.13	2.51	2.42	4.93	62	63	62	61	63	61	61	61			76	46	61.3	64	2.20	1.03	3.84	4.50	1016
21	1.85	1.73	3.58	1.90	2.13	4.03	1.90	2.18	4.08	2.50	2.43	4.93	65	62	61	61	70	61	60	60			71	37	55.8	65	3.98	1.08	3.83	4.48	1535
22	1.87	1.73	3.60	1.91	2.14	4.05	1.88	2.21	4.09	2.52	2.44	4.96	56	56	57	59	59	59	60	60			76	33	57.3	73	.84	1.11	3.84	4.50	0950
23	1.90	1.75	3.65	1.89	2.13	4.02	1.89	2.19	4.08	2.50	2.44	4.94	59	59	60	60	61	59	60	60	T	T	84	41	66.8	60	.93	1.13	3.86	4.48	1000
24	1.84	1.72	3.56	1.86	2.13	3.99	1.86	2.18	4.04	2.49	2.31	4.80	61	61	61	61	64	61	61	60			74	39	59.7	67	3.05	1.17	3.80	4.40	1055
25	1.85	1.76	3.61	1.85	2.03	3.88	1.83	2.17	4.00	2.50	2.09	4.59	58	58	60	61	61	59	60	60			81	36	59.8	70	1.42	1.20	3.80	4.24	1020
26	1.80	1.75	3.55	1.86	1.86	3.72	1.80	2.14	3.94	2.50	1.99	4.49	60	59	61	61	63	60	60	60			88	37	63.9	63	.98	1.23	3.74	4.10	1030
27	1.77	1.93	3.70	2.08	1.82	3.90	1.81	2.16	3.97	2.50	1.99	4.49	66	67	65	66	61	60	60	60			84	36	62.4	64	2.03	1.26	3.84	4.20	1000
28	1.77	2.04	3.81	2.20	1.95	4.15	1.76	2.10	3.86	2.50	1.93	4.43	69	65	63	62	74	62	60	60			88	41	63.8	71	2.02	1.29	3.84	4.27	1410
29	1.74	1.96	3.70	2.21	1.92	4.13	1.75	2.11	3.86	2.59	1.92	4.51	60	61	61	61	62	60	60	61			91	40	65.9	67	.38	1.32	3.78	4.32	0950
30	1.68	2.04	3.72	2.34	2.04	4.38	1.60	2.01	3.61	2.54	1.70	4.24	82	75	70	70	87	75	73	71			95	41	66.5	66	1.26	1.34	3.67	4.31	1515
31	1.67	1.95	3.62	2.21	1.92	4.13	1.69	2.06	3.75	2.61	1.91	4.52	61	60	62	57	64	62	61	60			93	38	67.0	66	.58	1.36	3.68	4.32	1010
SUMS 1-10																					--	--									
SUMS 11-20																					.10	.10									
SUMS 21-31																					T	T									
SUMS Month																					.10	.10									
MEANS 1-10	1.87	1.88	3.76	2.18	2.16	4.34	2.10	2.00	4.10	2.50	2.44	4.94	63.0	61.3	60.5	59.8	66.8	60.8	59.8	59.5			--	--	--	--	.58	-	3.93	4.64	
MEANS 11-20	1.86	1.84	3.69	2.07	2.14	4.20	2.02	2.08	4.10	2.52	2.44	4.95	65.1	64.0	66.0	61.7	69.1	63.1	61.9	61.3			76.2	45.2	61.1	68.9	1.49	1.02	3.90	4.58	
MEANS 21-31	1.79	1.85	3.64	2.03	2.01	4.03	1.80	2.14	3.93	2.52	2.10	4.63	63.4	61.3	61.9	61.7	66.0	61.6	61.4	61.3			84.1	38.1	62.6	66.5	1.59	1.23	3.79	4.53	
MEANS Month	1.83	1.85	3.68	2.07	2.08	4.15	1.94	2.09	4.03	2.52	2.29	4.81	64.0	62.4	63.3	61.4	67.4	62.1	61.3	60.9			82.0	40.0	62.2	67.2	1.52	1.18	3.86	4.48	

Table 36. Soil moisture and temperature and related factors

LAKE AUGUST 1952

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE LAKE MONTH AUGUST 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground Water	Soil moisture Av. T-1-2 0-6	6-12	TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	Ft.			(Hours)
1	1.59	1.33	3.32	2.21	1.89	4.10	1.66	2.03	3.69	2.51	1.92	4.43	62	61	62	61	63	62	62	61			87	46	66.4	66	.36	1.39	3.60	4.26	0915
2	1.57	1.91	3.48	2.26	1.91	4.17	1.66	1.98	3.64	2.49	2.29	4.78	61	61	62	62	61	62	62	62			89	38	63.6	63	1.72	1.41	3.56	4.48	0915
3	1.56	1.90	3.46	2.21	1.86	4.07	1.67	2.00	3.67	2.61	2.67	5.28	58	60	61	61	62	66	68	68			90	38	64.8	66	.90	1.43	3.56	4.68	0745
4	1.46	1.80	3.26	2.17	2.04	4.21	1.52	1.80	3.32	2.46	2.49	4.95	70	67	63	62	71	66	62	61			93	40	67.8	67	.79	1.45	3.28	4.58	1860
5	1.46	1.75	3.21	2.15	2.14	4.27	1.53	1.83	3.36	2.42	2.43	4.85	61	62	62	62	62	62	62	62			91	44	67.4	63	.60	1.48	3.28	4.56	0850
6	1.39	1.70	3.09	2.11	2.21	4.32	1.47	1.80	3.27	2.39	2.39	4.78	60	61	62	62	60	61	62	62			81	45	62.4	67	1.97	1.49	3.18	4.55	0805
7	1.34	1.67	3.01	2.09	2.29	4.38	1.40	1.74	3.14	2.39	2.38	4.77	63	62	62	62	68	62	62	63			79	41	62.8	73	1.34	1.51	3.08	4.58	1100
8	1.33	1.64	2.97	2.07	2.25	4.32	1.41	1.74	3.15	2.36	2.36	4.72	62	62	62	62	62	62	62	62			87	46	66.9	69	.62	1.52	3.06	4.52	0905
9	1.27	1.58	2.85	2.01	2.25	4.26	1.34	1.71	3.05	2.37	2.33	4.70	64	62	62	62	71	62	61	61			93	43	69.0	69	1.04	1.53	2.95	4.48	1210
10	1.34	1.63	2.97	1.98	2.17	4.15	1.96	1.80	3.76	2.36	2.32	4.68	63	64	62	62	64	63	62	62	.28	.28	72	44	59.4	84	1.27	1.54	3.36	4.42	1120
11	1.38	1.65	3.03	2.04	2.15	4.19	1.69	1.81	3.50	2.37	2.37	4.74	67	64	62	61	73	63	61	61			83	40	62.7		1.36	1.52	3.26	4.46	1505
12	1.30	1.58	2.88	2.01	2.14	4.15	1.55	1.75	3.30	2.33	2.32	4.65	67	64	62	62	73	63	62	62			89	41	63.6	70	.77	1.53	3.09	4.40	1410
13	1.23	1.53	2.76	1.98	2.13	4.11	1.44	1.69	3.13	2.30	2.30	4.60	66	63	62	61	73	62	60	61			89	43	66.9	62	2.15	1.55	2.94	4.36	1350
14	1.19	1.50	2.69	1.95	2.14	4.09	1.37	1.63	3.00	2.26	2.30	4.56	65	63	62	62	72	62	61	61			84	46	65.4	59	2.58	1.58	2.84	4.32	1345
15	1.18	1.49	2.67	1.94	2.13	4.07	1.34	1.60	2.94	2.27	2.26	4.53	63	61	61	61	66	62	60	60			77	46	61.2	64	2.83	1.60	2.80	4.30	1350
16	1.15	1.48	2.63	1.90	2.12	4.02	1.28	1.59	2.87	2.25	2.30	4.53	63	60	61	62	69	61	60	61			75	35	55.4	68	2.20	1.62	2.75	4.28	1315
17	1.13	1.47	2.60	2.10	2.08	4.18	1.33	1.59	2.92	2.23	2.30	4.53	56	58	61	61	55	59	60	61			81	31	56.6	67	1.03	1.63	2.76	4.36	0900
18	1.14	1.47	2.61	1.89	2.15	4.04	1.27	1.62	2.89	2.55	2.40	4.75	57	58	60	61	64	66	68	64			78	34	56.0	68	1.33	1.64	2.75	4.40	0935
19	1.11	1.44	2.55	1.82	2.09	3.91	1.21	1.59	2.80	2.21	2.21	4.42	53	57	59	60	53	57	59	60			75	31	53.4	71	2.16	1.67	2.68	4.16	0825
20	1.07	1.41	2.48	1.80	2.08	3.88	1.08	1.54	2.62	2.12	2.14	4.26	61	58	57	59	68	59	58	59			80	31	55.1	69	1.50	1.68	2.55	4.07	1355
21	1.07	1.41	2.48	1.75	2.03	3.78	1.15	1.58	2.73	2.08	2.14	4.22	52	57	59	60	52	58	59	59			85	31	57.4	70	.65	1.70	2.60	4.00	0810
22	1.02	1.41	2.43	1.78	2.04	3.82	1.03	1.51	2.54	2.21	2.07	4.28	61	57	56	59	66	59	59	59			82	36	61.8	64	2.51	1.71	2.48	4.05	1335
23	1.02	1.40	2.42	1.73	2.03	3.76	1.01	1.53	2.54	2.02	2.09	4.11	61	60	61	61	66	60	60	60	.02	.02	78	37	59.8	65	2.06	1.72	2.48	3.94	1200
24	.96	1.38	2.34	1.71	2.04	3.75	.94	1.51	2.45	1.93	2.04	3.97	62	60	58	58	62	59	58	58			79	32	57.8	68	2.06	1.73	2.40	3.86	1725
25	.98	1.37	2.35	1.71	2.01	3.72	1.00	1.51	2.51	1.88	2.03	3.91	57	58	58	59	59	58	58	59			71	31	54.3	71	2.05	1.75	2.43	3.82	1010
26	1.00	1.38	2.38	1.68	2.01	3.69	1.00	1.50	2.50	1.87	2.03	3.90	52	55	57	59	54	55	59	59			75	27	48.9	73	1.39	1.77	2.44	3.80	1400
27	.94	1.37	2.31	1.67	1.94	3.61	.95	1.49	2.44	1.83	1.96	3.79	59	56	56	57	63	56	55	58			79	29	51.8	70	.98	1.78	2.38	3.70	1100
28	.96	1.37	2.33	1.70	1.95	3.65	.93	1.51	2.44	1.80	1.96	3.76	52	54	55	53	56	54	54	58			79	27	56.1	64	.73	1.79	2.38	3.70	1550
29	.91	1.36	2.27	1.66	1.90	3.56	.85	1.47	2.32	1.76	1.91	3.67	62	59	57	57	63	59	57	58			72	29	54.9	64	2.62	1.81	2.30	3.62	1720
30	.89	1.35	2.24	1.64	1.88	3.52	.82	1.48	2.30	1.79	1.95	3.74	60	59	59	59	62	59	59	59			69	25	48.4	69	1.83	1.82	2.27	3.63	1055
31	.91	1.35	2.26	1.66	1.88	3.54	.84	1.49	2.33	1.78	1.95	3.73	56	57	57	59	60	58	58	59	T	T	74	34	54.1	70	1.31	1.83	2.30	3.64	
SUMS 1-10																					.28	.28									
SUMS 11-20																					--	--									
SUMS 21-31																					.02	.02									
SUMS Month																					.30	.30									
MEANS 1-10	1.43	1.75	3.18	2.12	2.10	4.22	1.56	1.84	3.40	2.44	2.36	4.79	62.4	62.2	62.0	61.8	64.4	62.8	62.7	62.4			86.2	42.5	65.0	68.7	1.06	1.48	3.29	4.51	
MEANS 11-20	1.19	1.50	2.69	1.94	2.12	4.06	1.36	1.64	3.00	2.27	2.29	4.56	61.8	60.6	60.7	61.0	66.6	61.4	60.9	61.0			81.1	37.8	59.6	66.4	1.79	1.60	2.84	4.31	
MEANS 21-31	.97	1.38	2.35	1.70	1.97	3.67	.97	1.51	2.46	1.90	2.01	3.92	57.6	57.4	57.4	58.3	60.4	57.7	57.8	58.7			76.6	30.7	55.0	68.0	1.65	1.76	2.41	3.80	
MEANS Month	1.19	1.54	2.73	1.91	2.06	3.98	1.28	1.66	2.94	2.19	2.21	4.41	60.5	60.0	59.9	60.3	63.7	60.5	60.4	60.6			81.2	36.8	59.7	67.8	1.51	1.62	2.85	4.19	

Table 37. Soil moisture and temperature and related factors

L A K E S E P T E M B E R 1 9 5 2

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE LAKE MONTH SEPTEMBER 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground Water Table	Soil Moisture AV. T-1-2 0-6	6-12	TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	Ft.			(Hours)
1	.85	1.34	2.19	1.66	1.83	3.49	.82	1.47	2.29	1.75	1.92	3.67	62	58	57	59	65	59	58	59			78	29	53.7	68	.56	1.84	2.24	3.58	1520
2	.87	1.34	2.21	1.61	1.82	3.43	.79	1.48	2.27	1.76	1.89	3.65	53	54	55	56	59	54	55	57			84	30	56.4	69	.49	1.85	2.24	3.54	1125
3	.84	1.35	2.17	1.63	1.80	3.43	.78	1.48	2.26	1.76	1.95	3.71	61	59	58	58	66	60	59	59			81	39	58.3	71	1.32	1.86	2.22	3.57	1520
4	.77	1.32	2.09	1.57	1.75	3.32	.81	1.47	2.28	1.75	1.89	3.64	61	58	59	59	63	57	56	57			81	32	55.4	65	.76	1.88	2.18	3.48	1330
5	.83	1.31	2.14	1.58	1.71	3.29	.87	1.48	2.35	1.71	1.81	3.52	53	54	54	55	55	54	54	55			68	38	54.4	71	.82	1.90	2.20	3.40	1015
6	.75	1.30	2.05	1.57	1.64	3.21	.94	1.49	2.43	1.73	1.86	3.59	61	58	56	58	60	58	57	58			70	43	55.5	82	.90	1.90	2.24	3.40	1400
7	.77	1.37	2.14	1.55	1.60	3.15	1.48	1.52	3.00	1.76	1.91	3.67	55	56	56	57	58	57	57	58	.11	.11	66	31	52.0	64	1.92	1.90	2.57	3.41	1120
8	.75	1.29	2.04	1.54	1.57	3.11	1.38	1.55	2.93	1.89	2.00	3.89	52	54	56	57	51	54	55	55	.03	.03	60	29	45.4	92	.91	1.90	2.48	3.50	0950
9	1.09	1.53	2.62	1.55	1.57	3.12	1.80	1.86	3.66	1.80	1.93	3.73	56	56	55	56	58	56	56	57	.25	.25	56	44	51.3	92	.89	1.89	3.14	3.42	1525
10	1.09	1.51	2.60	1.57	1.57	3.14	1.64	1.80	3.44	1.80	1.89	3.69	53	55	55	56	54	55	56	57			68	41	53.9	85	.31	1.86	3.02	3.42	0914
11	1.07	1.46	2.53	1.55	1.55	3.10	1.51	1.73	3.24	1.77	1.86	3.63	52	52	53	55	54	54	54	55	.01	.01	77	42	56.0	73	.50	1.86	2.88	3.36	0955
12	1.02	1.43	2.45	1.53	1.55	3.08	1.42	1.71	3.13	1.79	1.78	3.57	52	55	55	55	53	53	53	54	.01	.01	67	30	51.7	71	1.78	1.86	2.79	3.32	0840
13	1.08	1.44	2.52	1.57	1.57	3.14	1.47	1.71	3.18	1.87	1.94	3.81	55	53	54	56	58	54	54	56	.08	.08	69	25	44.8	72	2.04	1.89	2.85	3.48	1235
14	1.04	1.43	2.47	1.57	1.55	3.12	1.37	1.71	3.08	1.87	1.95	3.82	52	51	52	55	58	53	54	57			76	27	48.4	73	.90	1.90	2.78	3.47	1230
15	1.01	1.39	2.40	1.55	1.56	3.11	1.30	1.66	2.96	1.80	1.88	3.68	55	52	52	54	60	52	52	54			81	30	50.0	74	.69	1.90	2.68	3.40	1345
16	1.01	1.40	2.41	1.55	1.56	3.11	1.29	1.67	2.96	1.81	1.93	3.74	47	50	52	54	48	51	53	54			82	29	53.7	70	.60	1.91	2.68	3.42	0920
17	.97	1.39	2.36	1.57	1.56	3.13	1.25	1.68	2.93	1.79	1.88	3.67	51	51	52	54	52	52	53	54			84	36	56.8	72	1.04	1.92	2.64	3.40	0935
18	.93	1.37	2.30	1.55	1.55	3.10	1.21	1.64	2.85	1.81	1.93	3.74	57	55	54	55	61	54	53	54			87	36	59.4	71	1.23	1.93	2.58	3.42	1340
19	.89	1.35	2.24	1.55	1.55	3.10	1.15	1.63	2.78	1.80	1.95	3.75	58	56	54	55	62	55	54	55			82	38	57.1	73	.91	1.94	2.51	3.42	1350
20	.92	1.35	2.27	1.58	1.57	3.15	1.10	1.64	2.74	1.85	1.93	3.78	53	54	52	56	56	54	54	57			81	33	58.8	61	.43	1.95	2.50	3.46	1115
21	.86	1.34	2.20	1.54	1.54	3.08	1.08	1.62	2.70	1.87	1.99	3.86	53	52	52	53	59	52	52	54			81	34	55.4	69	1.41	1.95	2.45	3.52	1245
22	.88	1.34	2.22	1.55	1.53	3.08	1.10	1.70	2.80	1.85	2.03	3.88	47	50	52	54	47	46	53	54			84	29	51.9	75	.30	1.96	2.51	3.48	0855
23	.85	1.33	2.18	1.54	1.54	3.08	1.07	1.64	2.71	1.87	2.01	3.88	47	50	52	53	49	50	52	53			86	28	52.4	71	.40	1.96	2.44	3.48	1010
24	.85	1.33	2.18	1.54	1.53	3.07	1.07	1.64	2.71	1.85	1.98	3.83	46	50	52	52	46	50	52	53			88	29	54.4	71	.59	1.97	2.44	3.45	0905
25	.84	1.33	2.17	1.54	1.52	3.06	1.05	1.64	2.69	1.85	2.01	3.86	49	50	52	53	52	50	52	53			91	32	56.4	70	.56	1.97	2.43	3.46	1040
26	.84	1.33	2.17	1.54	1.52	3.06	1.06	1.65	2.71	1.87	2.01	3.88	49	51	52	53	50	51	52	53			88	36	65.6	52	.77	1.98	2.44	3.47	0910
27	.80	1.32	2.12	1.54	1.52	3.06	1.02	1.65	2.67	1.85	1.99	3.84	52	52	52	53	54	53	54	54			72	44	58.0	58	3.01	1.99	2.40	3.45	1025
28	.79	1.32	2.11	1.54	1.51	3.05	1.04	1.66	2.70	1.89	2.03	3.92	52	51	52	54	54	52	53	54			75	34	52.8	69	2.04	1.99	2.40	3.48	1110
29	.79	1.31	2.10	1.52	1.49	3.01	1.03	1.63	2.66	1.83	1.96	3.79	52	51	52	52	57	52	51	52			78	31	50.4	74	1.84	2.00	2.39	3.40	1350
30	.79	1.31	2.10	1.53	1.49	3.02	1.04	1.65	2.69	1.85	1.96	3.81	46	50	51	52	44	49	51	52			75	30	50.5	72	.91	2.01	2.40	3.42	0745
31																															
SUMS 1-10																					.39	.39									
SUMS 11-20																					.10	.10									
SUMS 21-31																					--	--									
SUMS Month																					.49	.49									
MEANS 1-10	.86	1.36	2.22	1.56	1.69	3.27	1.13	1.56	2.70	1.77	1.90	3.68	56.7	56.2	56.1	57.1	58.9	56.4	56.3	57.2			71.2	35.6	53.6	75.9	.89	1.88	2.45	3.47	
MEANS 11-20	.99	1.40	2.40	1.56	1.56	3.11	1.31	1.68	2.99	1.82	1.90	3.72	53.0	52.9	53.0	54.9	56.4	53.2	53.4	50.0			78.6	32.6	53.7	71.0	1.01	1.91	2.69	3.42	
MEANS 21-31	.85	1.35	2.16	1.54	1.52	3.06	1.06	1.65	2.70	1.86	2.00	3.76	49.3	50.7	51.9	52.9	51.2	50.5	52.2	53.2			81.8	32.7	54.8	68.1	1.18	1.98	2.43	3.46	
MEANS Month	.89	1.36	2.26	1.56	1.59	3.15	1.17	1.63	2.80	1.82	1.93	3.72	53.0	53.3	53.7	55.0	55.5	53.4	54.0	53.5			77.2	33.6	54.0	71.7	1.03	1.92	2.52	3.45	

Table 38. Soil moisture and temperature and related factors

L A K E O C T O B E R 1 9 5 2

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE LAKE MONTH OCTOBER 1952

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) (Degrees F) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) (Degrees F) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION[1] TIER 1 (Inches)	TIER 2	AIR TEMPERATURE MAXIMUM (Degrees F)	MINIMUM	MEAN	RELATIVE HUMIDITY (Percent)	WIND VELOCITY (mph)	Ground water Ft.	Soil moisture Av. T-1-2 0-6	6-12	TIME (Hours)
1	.79	1.31	2.10	1.54	1.47	3.01	1.03	1.63	2.66	1.85	1.96	3.81	52	50	50	52	57	52	51	52			80	30	49.9	72	1.44	2.02	2.38	3.41	1450
2	.80	1.32	2.12	1.55	1.49	3.04	1.05	1.65	2.70	1.83	1.96	3.79	45	48	51	52	54	49	51	52			80	29	50.9	71	.55	2.02	2.41	3.42	0755
3	.80	1.31	2.11	1.55	1.49	3.04	1.05	1.66	2.71	1.85	1.96	3.81	52	51	51	52	55	50	50	52			78	25	47.6	72	1.28	2.02	2.41	3.42	1350
4	.81	1.31	2.12	1.54	1.47	3.01	1.07	1.63	2.70	1.85	1.96	3.81	50	49	49	52	51	49	49	51			74	20	43.8	69	.72	2.03	2.41	3.41	1540
5	.80	1.33	2.13	1.56	1.49	3.05	1.10	1.66	2.76	1.85	1.96	3.81	52	50	49	52	50	50	50	51			76	21	43.5	72	.40	2.03	2.44	3.43	1705
6	.83	1.32	2.15	1.54	1.48	3.02	1.11	1.64	2.75	1.83	1.89	3.72	42	44	47	50	42	45	48	50			80	22	44.8	75	.14	2.03	2.45	3.37	0945
7	.85	1.33	2.18	1.56	1.48	3.04	1.14	1.67	2.81	1.85	1.94	3.79	49	48	47	51	52	49	49	50			80	23	45.0	75	.47	2.03	2.50	3.42	1525
8	.85	1.34	2.19	1.54	1.51	3.05	1.15	1.66	2.81	1.88	1.94	3.82	43	44	47	49	45	46	47	50			78	25	46.1	75	.25	2.03	2.50	3.44	1040
9	.86	1.33	2.19	1.57	1.51	3.08	1.17	1.67	2.84	1.85	1.94	3.79	49	48	48	51	52	49	49	50			76	27	48.1	74	.52	2.03	2.52	3.44	1420
10	.86	1.34	2.20	1.56	1.50	3.06	1.16	1.65	2.81	1.88	1.89	3.77	48	47	47	50	51	47	47	50			77	27	46.9	77	.56	2.04	2.50	3.42	1355
11	.88	1.34	2.22	1.57	1.51	3.08	1.19	1.68	2.87	1.85	1.94	3.79	44	46	48	51	46	46	49	50			72	28	46.3	78	.24	2.04	2.54	3.44	1020
12	.87	1.33	2.20	1.56	1.51	3.07	1.20	1.68	2.88	1.90	1.91	3.81	45	46	47	48	48	46	46	49			72	30	44.4	75	1.22	2.04	2.54	3.44	1240
13	.87	1.34	2.21	1.56	1.51	3.07	1.19	1.65	2.84	1.90	1.88	3.78	45	44	47	48	49	46	46	49			64	20	40.4	73	1.60	2.05	2.53	3.42	1305
14	.92	1.35	2.27	1.58	1.52	3.10	1.21	1.63	2.84	1.88	1.89	3.77	43	43	46	49	46	46	47	50			62	15	35.6	72	1.56	2.05	2.56	3.44	1400
15	.89	1.33	2.22	1.56	1.51	3.07	1.21	1.59	2.80	1.80	1.80	3.60	42	43	43	47	45	42	45	47			60	16	35.3	74	.56	2.04	2.51	3.34	1340
16	.91	1.35	2.26	1.59	1.53	3.12	1.24	1.58	2.82	1.83	1.78	3.61	45	44	45	48	47	46	46	48			67	22	40.9	73	.76	2.03	2.54	3.36	1455
17	.92	1.35	2.27	1.56	1.51	3.07	1.24	1.58	2.82	1.76	1.77	3.53	44	43	43	47	46	43	44	46			71	21	39.7	78	.88	2.04	2.54	3.30	1535
18	.91	1.35	2.26	1.56	1.51	3.07	1.28	1.58	2.86	1.78	1.77	3.55	43	43	43	47	46	42	45	46			71	22	41.8	77	--	2.03	2.56	3.31	1435
19	.92	1.34	2.26	1.56	1.53	3.09	1.28	1.73	3.01	1.78	1.72	3.50	42	42	43	46	45	42	43	46			67	25	42.2	87	--	2.03	2.64	3.30	1330
20	.92	1.35	2.27	1.57	1.53	3.10	1.33	1.55	2.88	1.80	1.76	3.56	47	45	45	47	48	46	45	47			64	28	42.1	84	--	2.05	2.58	3.33	1540
21	.95	1.32	2.27	1.57	1.53	3.10	1.34	1.56	2.90	1.78	1.77	3.55	44	44	44	46	47	45	45	46			71	30	49.2	80	--	2.02	2.58	3.33	1140
22	.93	1.35	2.28	1.57	1.51	3.08	1.34	1.58	2.92	1.83	1.77	3.60	42	43	44	47	43	43	44	46			69	28	41.8	84	.44	2.02	2.60	3.34	1110
23	.96	1.35	2.31	1.57	1.51	3.08	1.35	1.54	2.89	1.79	1.72	3.51	43	43	44	47	46	43	44	46			70	26	41.1	84	.47	2.00	2.60	3.30	1325
24	.95	1.34	2.29	1.57	1.53	3.10	1.41	1.56	2.97	1.80	1.77	3.57	46	44	44	46	46	45	45	46			61	25	43.3	77	1.77	2.00	2.63	3.34	1605
25	.95	1.35	2.30	1.57	1.53	3.10	1.38	1.55	2.93	1.80	1.79	3.59	38	41	43	46	35	42	43	45			62	18	34.1	81	.76	1.99	2.62	3.34	0935
26	.97	1.36	2.33	1.57	1.53	3.10	1.36	1.55	2.91	1.81	1.75	3.56	37	39	42	45	37	40	42	45			63	16	33.8	78	.63	1.97	2.62	3.33	1330
27	.97	1.37	2.34	1.56	1.54	3.10	1.35	1.54	2.89	1.79	1.71	3.50	39	40	42	44	40	40	42	44			62	19	32.3	83	.30	1.95	2.62	3.30	1555
28	.98	1.36	2.34	1.58	1.53	3.11	1.36	1.55	2.91	1.81	1.77	3.58	36	39	42	46	35	40	42	46			62	17	34.8	81	.44	1.92	2.62	3.34	1115
29	1.00	1.37	2.37	1.79	1.55	3.34	1.39	1.56	2.94	1.81	1.81	3.62	39	41	42	45	41	41	42	44			49	27	39.4	85	.77	1.88	2.66	3.48	1325
30	1.17	1.70	2.87	1.61	1.62	3.23	2.03	1.90	3.93	1.81	1.95	3.76	41	42	42	44	42	42	42	44	.33	.33	50	31	41.1	96	.64	1.83	3.40	3.50	1015
31	1.44	1.72	3.16	1.67	1.61	3.28	1.89	1.99	3.88	2.24	1.93	4.17	40	41	42	43	41	41	42	43	T	T	44	30	36.0	94	1.07	1.78	3.52	3.72	1435
SUMS 1-10																					--	--									
SUMS 11-20																					--	--									
SUMS 21-31																					.33	.33									
SUMS Month																					.33	.33									
MEANS 1-10	.82	1.32	2.15	1.55	1.49	3.04	1.10	1.65	2.76	1.85	1.94	3.79	48.2	47.9	48.6	51.1	50.9	48.6	49.1	50.8			77.9	24.9	46.7	73.2	.63	2.03	2.45	3.42	
MEANS 11-20	.90	1.34	2.24	1.57	1.52	3.08	1.24	1.63	2.86	1.83	1.82	3.65	44.0	43.9	44.8	47.8	46.6	44.5	45.4	47.8			67.0	22.7	40.9	77.1	.97	2.04	2.55	3.37	
MEANS 21-31	1.02	1.42	2.44	1.60	1.54	3.15	1.47	1.62	3.10	1.84	1.79	3.64	40.4	41.5	42.9	45.4	41.2	42.0	43.0	45.0			60.3	24.3	38.8	83.9	.73	1.94	2.77	3.39	
MEANS Month	.92	1.36	2.28	1.57	1.52	3.09	1.28	1.63	2.91	1.84	1.85	3.69	44.1	44.4	45.3	48.0	46.1	44.9	45.7	47.8			68.1	24.0	42.0	78.2	.76	2.00	2.60	3.39	

Table 39. Soil moisture and temperature and related factors

L A K E J U L Y 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE LAKE MONTH JULY 195 3

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION/ TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground water	Soil Moisture Av. T-1-2 0-6	6-12	TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	Ft.			(Hours)
1	2.11	2.16	4.27	2.34	2.40	4.74	2.09	2.15	4.24	2.51	2.47	4.98	63	60	56	56	68	59	55	54	.04	.04	72	40	55.9	72)		.07	4.26	4.86	
2	2.10	2.16	4.26	2.33	2.40	4.73	2.17	2.19	4.36	2.51	2.45	4.96	64	60	57	56	69	59	56	56			79	36	60.3	66)		.14	4.31	4.84	
3																							76	41	59.8	65)		.20			
4																							74	41	59.1	69)		.26			
5																							82	36	59.9	67)		.32			
6	2.11	2.14	4.25	2.33	2.39	4.72	2.17	2.21	4.38	2.51	2.45	4.96	62	60	58	57	69	59	58	58			87	39	64.6	66)		.38	4.32	4.84	
7																							89	42	67.1	66)		.44			
8	2.05	2.21	4.26	2.30	2.33	4.63	2.06	2.23	4.29	2.49	2.44	4.93	61	59	59	58	64	60	58	58			84	42	64.2	65)		.48	4.28	4.80	
9	2.03	2.31	4.24	2.36	2.34	4.70	2.08	2.41	4.49	2.49	2.44	4.93	65	65	60	57	70	65	61	61			86	38	63.8	65)		.54	4.36	4.82	
10	2.12	2.32	4.44	2.55	2.37	4.92	2.03	2.45	4.48	2.51	2.45	4.96	61	60	61	60	60	60	59	59			90	44	67.3	45)		.58	4.48	4.94	
11	2.35	2.37	4.72	2.55	2.31	4.86	2.01	2.40	4.41	2.57	2.47	4.94	62	61	61	60	62	60	60	59			94	44	69.7	66	.58	.68	4.56	4.90	
12	1.95	2.33	4.28	2.55	2.30	4.85	1.94	2.44	4.38	2.67	2.44	5.11	69	65	62	61	74	63	60	60			95	48	72.9	72	.77	.72	4.33	4.98	
13	1.80	2.33	4.13	2.55	2.38	4.93	1.90	2.44	4.34	2.67	2.47	5.14	69	66	62	62	75	65	61	60			88	56	71.6	63	.71	.77	4.24	5.04	
14	1.78	2.33	4.11	2.54	2.38	4.92	1.92	2.36	4.28	2.72	2.47	5.19	67	66	63	62	68	64	61	60			76	52	64.6	71	.71	.82	4.20	5.06	
15	1.77	2.31	4.08	2.58	2.34	4.92	1.93	2.29	4.22	2.70	2.47	5.17	61	63	63	62	59	61	61	60			71	41	57.5	68	1.16	.86	4.15	5.04	
16	1.67	2.15	3.82	2.58	2.61	5.19	1.84	2.18	4.02	2.67	2.47	5.14	65	63	61	61	69	60	59	60			80	37	59.4	72	1.58	.89	3.92	5.16	
17	1.67	2.13	3.80	2.58	2.88	5.46	1.84	2.16	4.00	2.71	2.56	5.37	65	63	61	61	70	62	60	60			86	38	63.8	66	.73	.94	3.90	5.42	
18	1.64	2.11	3.75	2.51	2.77	5.28	1.81	2.12	3.93	2.69	2.52	5.21	62	63	62	62	61	61	61	61			86	43	65.3	64	.59	.98	3.84	5.24	
19	1.57	2.05	3.62	2.40	2.77	5.17	1.78	2.10	3.88	2.69	2.52	5.21	61	64	63	61	59	63	62	61			80	38	61.8	63	2.45	1.02	3.75	5.19	
20	1.57	2.05	3.62	2.31	2.77	5.08	1.76	2.09	3.85	2.61	2.70	5.31	62	63	62	62	63	61	61	61			76	42	58.5	70	1.76	1.06	3.74	5.20	
21	1.53	2.05	3.58	2.19	2.77	4.96	1.75	2.08	3.83	2.46	2.72	5.18	65	63	61	61	69	63	62	63			81	36	60.3	68	1.19	1.10	3.70	5.07	
22	1.51	2.04	3.55	2.17	2.69	4.86	1.76	2.06	3.82	2.41	2.71	5.12	61	60	61	61	60	59	60	60			86	37	62.0	58	.58	1.13	3.68	4.99	
23	1.50	2.01	3.51	2.17	2.87	5.04	1.77	2.10	3.87	2.47	2.89	5.36	61	61	62	62	59	61	61	62			74	38	56.8	61	2.47	1.17	3.69	5.20	
24	1.49	1.95	3.44	2.14	2.78	4.92	1.71	2.00	3.71	2.37	2.73	5.10	56	59	60	60	55	59	60	60			80	32	56.3	68	1.53	1.20	3.58	5.01	
25	1.46	1.92	3.38	2.12	2.78	4.90	1.65	1.95	3.60	2.33	2.73	5.06	58	59	60	60	60	60	60	60			78	36	58.8	68	1.00	1.23	3.49	4.98	
26	1.47	1.92	3.39	2.14	2.89	5.03	1.68	1.94	3.57	2.31	2.71	5.02	59	59	60	60	59	59	59	60			82	46	63.4	69	1.16	1.26	3.48	5.02	
27	1.44	1.89	3.33	2.14	2.78	4.92	1.63	1.93	3.56	2.30	2.71	5.01	61	61	61	60	60	60	60	60			80	38	62.9	66	1.24	1.29	3.44	4.96	
28	1.41	1.89	3.30	2.14	2.53	4.67	1.59	1.91	3.50	2.30	2.59	4.89	60	59	61	60	56	60	60	60			83	32	57.8	67	1.24	1.31	3.40	4.78	
29	1.42	1.86	3.28	2.12	2.43	4.55	1.55	1.91	3.46	2.27	2.50	4.77	59	59	60	61	60	59	60	60			87	35	60.6	66	.53	1.33	3.37	4.66	
30	1.41	1.84	3.25	2.14	2.37	4.51	1.54	1.91	3.45	2.28	2.47	4.75	58	59	60	60	58	59	59	60			86	37	63.0	60	1.24	1.36	3.35	4.63	
31	1.40	1.79	3.19	2.14	2.31	4.45	1.52	1.89	3.41	2.30	2.47	4.77	58	59	61	60	57	60	60	60			77	32	56.2	61	3.95	1.39	3.50	4.61	
SUMS 1-10																					.04	.04									
SUMS 11-20																															
SUMS 21-31																															
SUMS Month																					.04	.04									
MEANS 1-10	2.09	2.22	4.30	2.37	2.38	4.75	2.10	2.28	4.38	2.51	2.45	4.96	62.8	60.8	58.6	57.4	66.8	60.1	57.9	57.8			81.9	39.9	62.2	66.6	1.08	.34	4.34	4.86	
MEANS 11-20	1.78	2.22	3.99	2.52	2.55	5.07	1.87	2.26	4.13	2.67	2.51	5.18	64.3	63.7	62.0	61.4	66.0	62.0	60.6	60.2			83.2	43.9	64.5	67.5	1.10	.87	4.96	5.12	
MEANS 21-31	1.46	1.92	3.38	2.15	2.65	4.80	1.65	1.97	3.62	2.35	2.66	5.00	59.6	59.8	60.6	60.4	59.4	59.9	60.1	60.4			81.3	36.1	59.8	64.7	1.47	1.25	3.50	4.90	
MEANS Month	1.71	2.09	3.81	2.33	2.55	4.88	1.83	2.14	3.97	2.50	2.55	5.05	62.0	61.4	60.6	60.0	63.4	60.6	59.7	59.7			82.1	39.8	62.0	66.2	1.22	.84	3.89	4.97	

10-day mean = 1.08

Table 40. Soil moisture and temperature and related factors

L A K E A U G U S T 1 9 5 3

Infiltration Project

SOIL MOISTURE AND TEMPERATURE AND RELATED FACTORS

SITE LAKE MONTH AUGUST 1953

DAY	SOIL MOISTURE TIER 1 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL MOISTURE TIER 2 Soil Depth (Inches) 0-3	3-6	0-6	6-9	9-12	6-12	SOIL TEMPERATURE TIER 1 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	SOIL TEMPERATURE TIER 2 Soil Depth (Inches) 1-1/2	4-1/2	7-1/2	10-1/2	PRECIPITATION TIER 1	TIER 2	AIR TEMPERATURE MAXIMUM	MINIMUM	MEAN	RELATIVE HUMIDITY	WIND VELOCITY	Ground water	Soil Moisture Av. T-1-2 0-6	6-12	TIME
	(Inches)												(Degrees F)								(Inches)		(Degrees F)			(Percent)	(mph)	ft.			(Hours)
1	1.29	1.76	3.05	2.12	2.27	4.39	1.47	1.85	3.32	2.25	2.37	4.62	55	58	60	60	55	58	59	60			83	29	57.4	65	.67	1.41	3.18	4.50	
2																							88	33	61.5	65	.34	1.43			
3	1.37	1.71	3.08	2.05	2.22	4.27	1.43	1.81	3.24	2.21	2.37	4.58	57	59	60	60	57	58	59	60			91	40	68.2	62	.34	1.45	3.16	4.42	
4	1.43	1.70	3.13	2.07	2.29	4.36	1.44	1.80	3.24	2.23	2.37	4.60	63	64	62	62	63	61	60	60			75	46	61.7	81	1.15	1.47	3.18	4.48	
5	1.35	1.71	3.06	2.02	2.22	4.24	1.44	1.79	3.23	2.20	2.37	4.57	59	60	60	60	58	60	60	60			84	44	63.0	71	.76	1.49	3.14	4.40	
6	1.36	1.70	3.06	2.07	2.29	4.36	1.40	1.79	3.19	2.26	2.40	4.66	60	62	62	62	60	61	61	61	.06	.06	92	40	67.1	66	.81	1.51	3.12	4.51	
7	1.35	1.69	3.04	2.03	2.29	4.32	1.38	1.75	3.13	2.26	2.40	4.66	62	64	63	62	61	62	61	61			88	49	68.0	67	.60	1.53	3.08	4.49	
8	1.79	2.09	3.88	2.21	2.29	4.50	1.84	2.09	3.93	2.26	2.42	4.68	62	63	62	62	63	62	61	61	.53	.53	69	49	58.5	87	1.64	1.51	3.90	4.59	
9	1.67	1.95	3.62	2.19	2.34	4.53	1.77	2.01	3.78	2.29	2.44	4.73	61	62	62	62	61	61	61	61	.02	.02	73	47	56.5	86	.74	1.47	3.70	4.63	
10	1.69	2.00	3.69	2.21	2.38	4.59	1.79	2.03	3.82	2.29	2.45	4.74	61	62	62	62	60	61	61	62	.15	.15	90	44	61.9	77	.74	1.42	3.75	4.66	
11	1.56	1.91	3.47	2.17	2.34	4.51	1.65	1.94	3.59	2.30	2.44	4.74	60	62	62	62	59	61	61	61			85	41	61.3	72	1.18	1.44	3.53	4.62	
12	1.52	1.85	3.37	2.13	2.34	4.47	1.55	1.90	3.45	2.26	2.42	4.68	60	62	62	62	59	60	61	61			89	39	61.9	66	.62	1.45	3.41	4.58	
13	1.46	1.76	3.22	2.09	2.29	4.38	1.49	1.82	3.31	2.23	2.40	4.63	58	61	62	62	57	60	60	61			88	33	59.8	67	1.54	1.48	3.22	4.50	
14	1.41	1.72	3.13	2.07	2.29	4.36	1.43	1.77	3.20	2.20	2.40	4.60	59	61	62	62	57	60	60	61			90	36	63.0	67	.59	1.51	3.16	4.48	
15	1.37	1.69	3.06	2.08	2.25	4.33	1.36	1.73	3.09	2.16	2.37	4.53	60	61	62	62	60	60	60	61			93	39	67.4	67	.56	1.53	3.08	4.43	
16	1.37	1.88	3.25	2.01	2.21	4.22	1.34	1.71	3.05	2.11	2.37	4.48	62	63	62	62	61	61	61	61			82	44	64.0	66	.68	1.56	3.15	4.35	
17	1.35	1.67	3.02	2.01	2.17	4.18	1.31	1.68	2.99	2.11	2.37	4.48	60	62	62	62	60	61	61	61							1.07	1.58	3.00	4.33	
18																											.73	1.61			
19	1.32	1.62	2.94	1.95	2.12	4.07	1.26	1.64	2.90	2.08	2.33	4.41	62	63	62	62	60	61	61	61							.73	1.63	2.92	4.24	
20	1.32	1.61	2.93	1.92	2.10	4.02	1.25	1.63	2.88	2.08	2.37	4.45	62	63	63	62	61	61	61	61							1.00		2.90	4.24	
21																															
22																															
23																															
24																															
25																															
26																															
27																															
28																															
29																															
30																															
31																															
SUMS 1-10																					.76	.76									
SUMS 11-20																															
SUMS 21-31																															
SUMS Month																					.76	.76									
MEANS 1-10	1.48	1.81	3.29	2.11	2.29	4.39	1.55	1.88	3.43	2.25	2.40	4.64	59.9	61.5	61.4	61.3	59.7	60.4	60.3	60.6			83.3	42.1	62.3	72.7	.78	1.47	3.35	4.52	
MEANS 11-20	1.41	1.74	3.15	2.05	2.23	4.28	1.40	1.76	3.16	2.17	2.38	4.55	60.3	61.9	62.0	61.9	59.3	60.5	60.6	61.0			89.5	38.7	62.8	61.1	.87	1.53	3.15	4.41	
MEANS 21-31																															
MEANS Month	1.44	1.78	3.22	2.08	2.26	4.34	1.48	1.82	3.30	2.21	2.39	4.61	60.2	61.8	61.8	61.7	59.6	60.5	60.5	60.9			85.6	40.8	62.5	70.9	.82	1.50	3.26	4.47	

Table 41. Maximum rainfall intensities

Site	Date	Interval	Intensity
		Minutes	Inches per hour
Burn	6-19-53	5	1.56
	6-15-53	6	1.20
	5-31-53	4	1.05
	8-10-52	8	.52
Timber	6-27-53	6	1.30
	8-10-52	7	.42
Benton	6-30-52	5	.84
Headquarters	5-31-53	7	1.54
	3-30-53	5	.96
	7- 1-52	7	.86
Lake	6-25-53	2	3.60
	6-29-52	3	2.80
	6-29-52	6	1.30
	6-25-53	11	1.09
	6-25-53	7	.94
	6-25-53	10	.78
	9- 8-52	5	.48

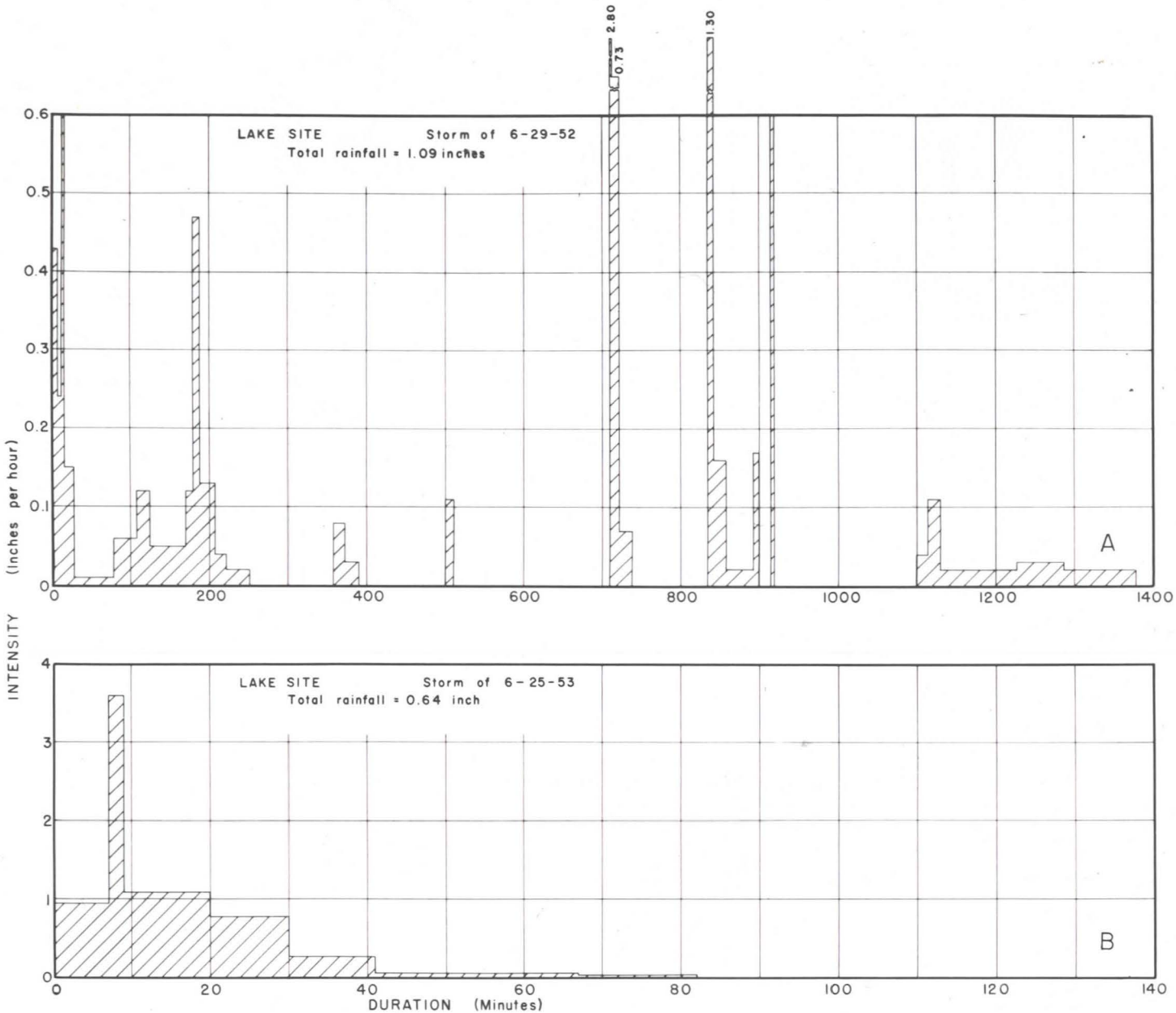

Figure 13. Rainfall intensity-duration relationships at the Lake site for storms of: A. June 29, 1952; B. June 25, 1953

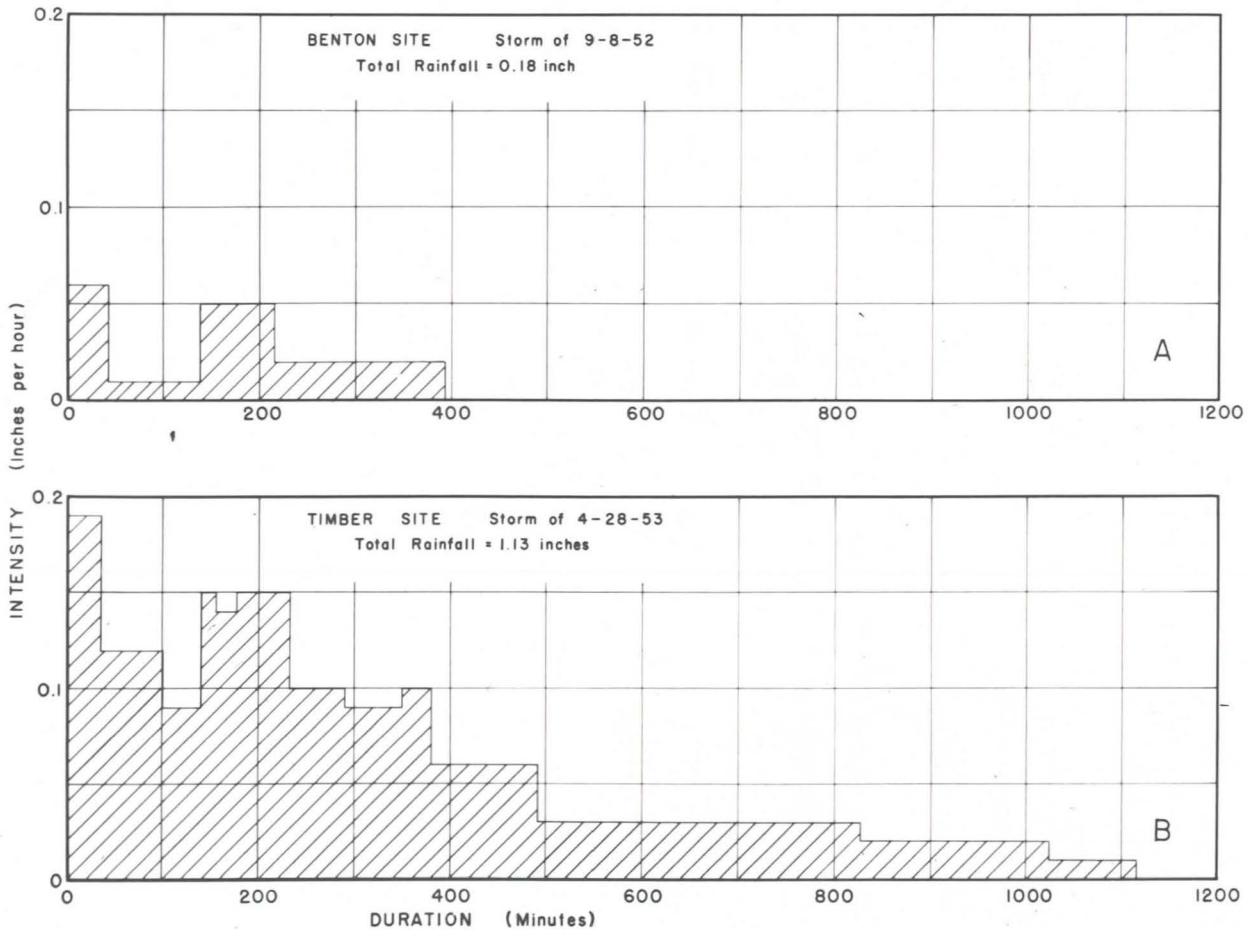

Figure 14. Rainfall intensity-duration relationships for the storms of: A. September 8, 1952 at the Benton site; B. April 28, 1953 at the Timber site.

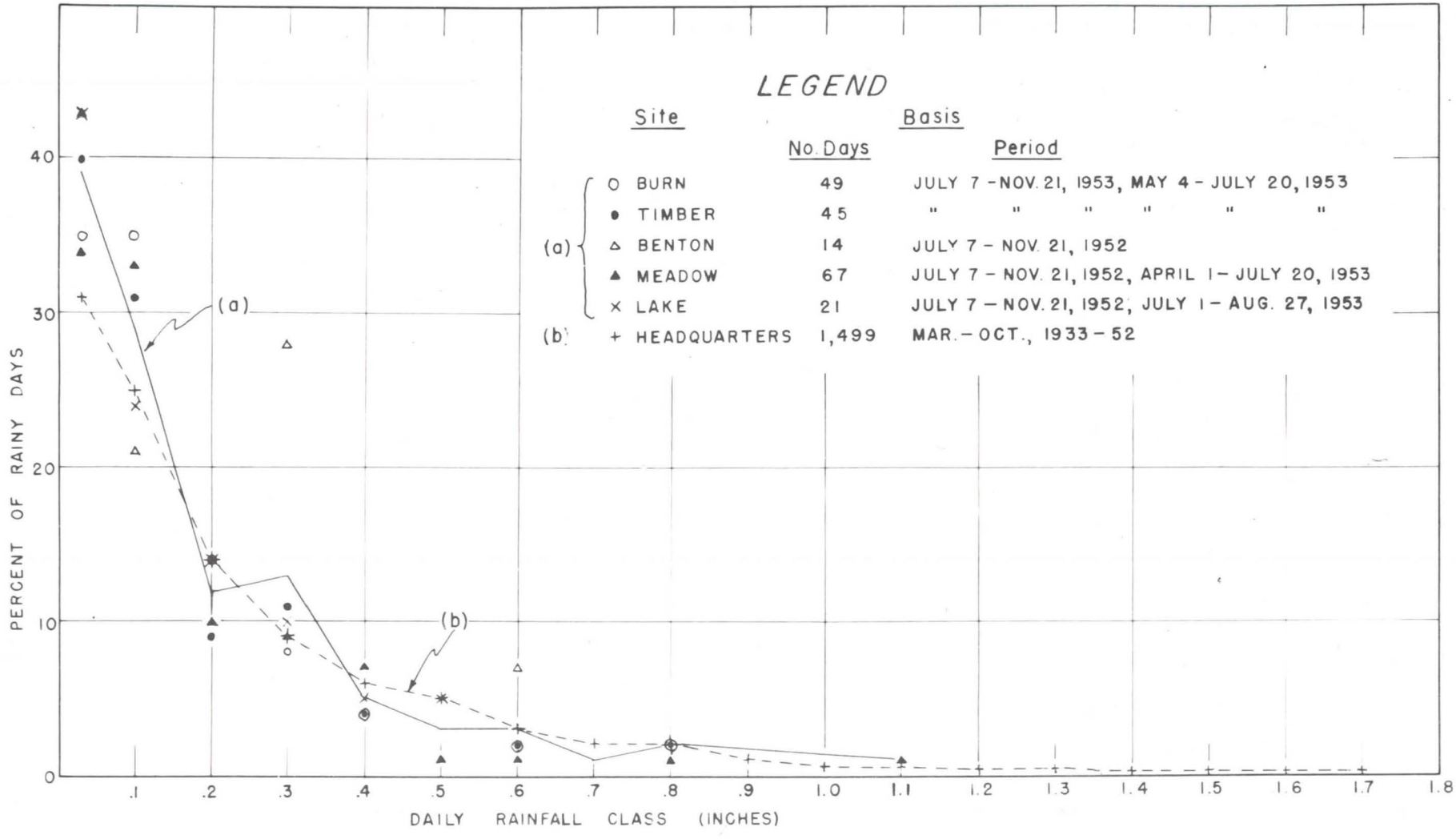

Figure 15. Rainfall storm size occurrence based on observational day totals for (a) period of record for study sites and (b) March-October, 1933-1952, inclusive, record at the Priest River Experimental Forest headquarters meteorological station.

Precipitation was measured on 30 percent of the days in the March-October periods in the decade. Precipitation during this 8-month period is usually rain. Figure 15 shows that daily rainfall amounts of 0.2 inch or greater occur on less than 15 percent of the rainy days and that less than 1 percent of the rainy days include total amounts in excess of 1.0 inch. Over one-half of the daily rainfall amounts are 0.1 inch or less.

Detailed analysis of all intensity gage records was not attempted because observations and infiltration tests indicated that surface runoff producing intensities in the study area probably occur only rarely.

The relationship of the mean through rainfall received by the two soil moisture sampling tiers at the Timber site to the general rainfall is shown in figure 16 and may be represented by the equation:

$$T = .930R - .022$$

where T is the throughfall and R is the general rain amount, both in inches. Rainfall at the Burn site represented the general rain. The throughfall — general rainfall relationship was not determined for the Benton site because there were no openings in the forest stand suitable for measuring the general rainfall.

Throughfall for a given storm is undoubtedly highly variable from point to point at the Timber site. Less variation would be expected at the Benton site where the crown cover is generally more uniform.

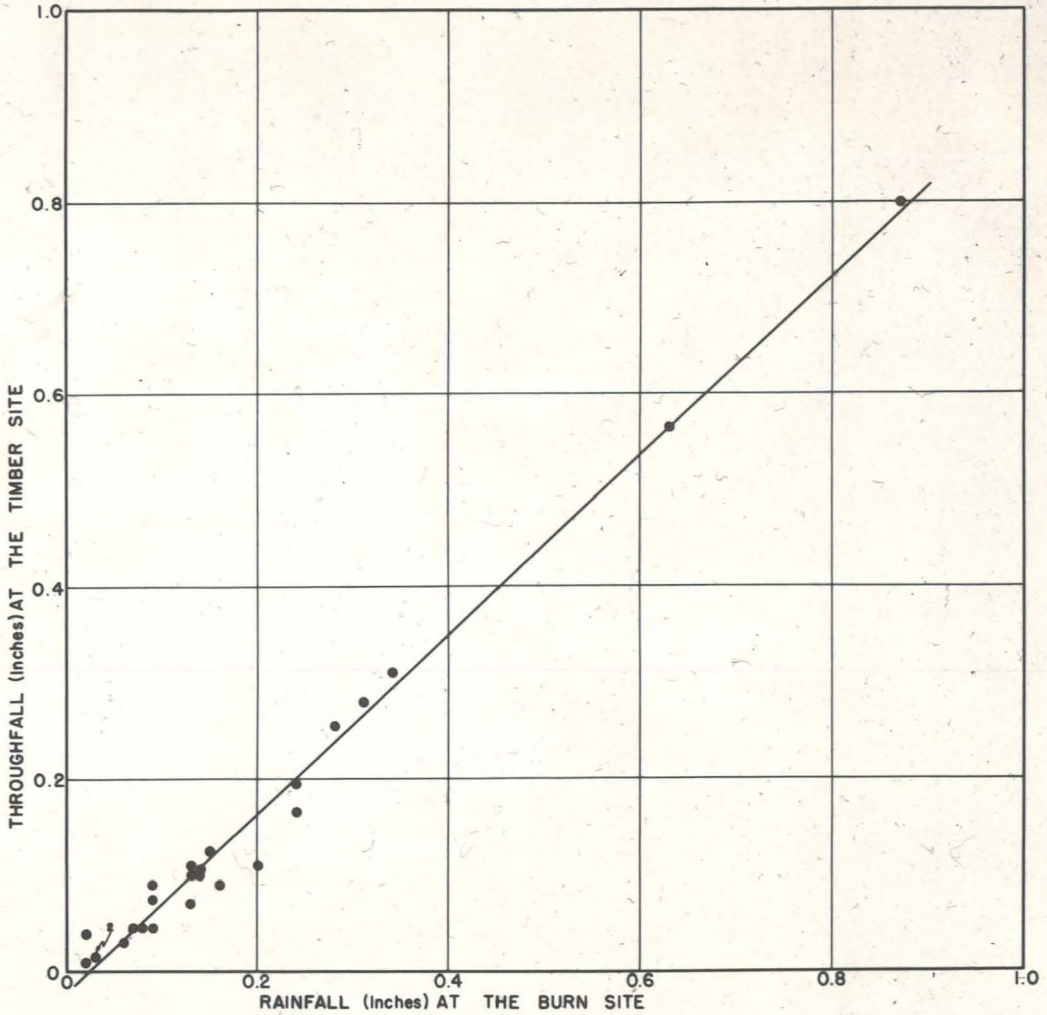

Figure 16. Relationship of mean through rainfall received by soil moisture sampling plots at the Timber site to the general rainfall at the adjacent Burn site.

Air Temperature and Relative Humidity

July-October, 1952 and April-August, 1953 mean monthly air temperatures at the Headquarters meteorological station ranged from 2.7° F. below to 3.5° F. above the normals (table 42). Thus both seasons of the study period were fairly representative of the normal air temperature climate. Mean monthly temperatures at Headquarters ranged from 42.6° F. in April 1953 to 63.6° F. in July 1952. Mean monthly maximum air temperatures at the Burn site, which supports a cover of small trees, were about 1° to 3° F. cooler than at the Lake and Headquarters sites which are essentially open areas. Mean monthly maximums at the Benton and Timber sites, both rather densely forested, were from 3° to 8° F. below those of the open sites. Mean monthly minimum temperatures were lowest at the Lake site which is the most completely open site, and highest at the Timber site. In general, the presence of a forest stand tended to reduce the maximum and increase the minimum temperatures as compared with the more open sites.

The difference in midnight to midnight mean hourly temperatures at the various sites for a particular day only occasionally exceeded 5° F. (tables 9-40, inclusive).

The micrometeorology of the sites was no doubt affected by other factors in addition to the nature of the cover of vegetation. The most pronounced of these effects was the cold air drainage in the narrow valley in which the Benton site was located. This probably accounts for the lower air temperatures at the Benton site as compared to the Timber site, the other rather heavily forested study area.

Table 42. Mean monthly maximum, minimum, and mean air temperature

Month	Burn			Timber			Benton			Lake			Headquarters			
	Maximum	Minimum	Mean 1/	Maximum	Minimum	Mean 1/	Maximum	Minimum	Mean 1/	Maximum	Minimum	Mean 1/	Maximum	Minimum	Mean 2/	Departure from normal 2/
	Degrees F.															
1952																
July	82.2 3/	38.9 3/	60.5 3/	74.6 3/	48.9 3/	61.7 3/	74.7 4/	46.8 4/	59.6 4/	82.0 4/	40.0 4/	62.2 4/	82.5	44.7	63.6	-0.8
August	80.2	37.2	58.3	76.6	45.2	60.8	70.4	43.0	55.7	81.2	36.8	59.7	81.6	43.5	62.6	0.0
September	73.9	32.7	51.1	70.5	40.2	54.0	67.2	40.2	51.4	77.2	33.6	54.0	76.7	38.4	57.6	3.5
October	62.1	25.6	40.6	60.3	32.2	44.1	54.2	31.6	40.9	68.1	24.0	42.0	67.4	28.3	47.9	3.5
1953																
April													54.1	31.1	42.6	-1.3
May	64.6	34.2	49.4	58.8	36.4	47.4							65.7	36.1	50.9	-0.5
June	67.4	42.0	54.4	61.5	44.0	52.4							67.4	43.2	55.3	-2.7
July	85.9 5/	44.6 5/	65.5 5/	79.0 5/	48.0 5/	63.2 5/				82.1	39.8	62.0	82.1	44.2	63.2	-1.2
August										85.6 6/	40.8 6/	62.5 6/	78.1	46.1	63.6	1.0

1/ Mean hourly
2/ From U.S.W.B. Monthly Climatological Data, Idaho Section
3/ Dates 16-31, inclusive
4/ Dates 17-31, inclusive
5/ Dates 1-14, inclusive
6/ Dates 1-16, inclusive

Mean monthly relative humidity was very uniform between the sites. The extremes during the period of study ranged from 62 to 80 percent. For particular months, the difference in mean monthly humidity between the various sites ranged from 4 to 7 percent (table 43). The differences in midnight to midnight mean hourly relative humidity for a particular day at the various sites was usually 10 percent or less but occasionally was as much as 12 to 16 percent; but there was no marked consistent differences between the sites (tables 9-40, inclusive). Night humidities were usually above 90 percent and often from 95 to 100 percent. Daily minimum humidities were usually below 40 percent and often below 30 percent but rarely below 20 percent. Humidities of from 15 to 20 percent were observed only on a few of the very driest days.

Table 43. Mean monthly relative humidity

Month	Site				
	Burn	Timber	Benton	Headquarters	Lake
	Percent				
	1952				
July	68[1]	72[1]	65[1]	65	67[1]
August	64	63	62	63	68
September	68	68	72	67	72
October	78	76	79	75	78
	1953				
April				74	
May	73	75		73	
June	78	80		74	
July	68[2]	67[2]		64[3]	66
August					71[4]

1/ Dates 16-31, inclusive
2/ Dates 1-14, inclusive
3/ Dates 1-20, inclusive
4/ Dates 1-16, inclusive

Wind

Mean monthly wind velocity, derived from mean daily velocities, was lowest at the Timber site where it ranged from less than 0.01 mph to 0.20 mph (table 44). The Benton site is also rather densely forested but the wind velocities approached those of the Burn site where the obstruction to wind is largely from reproduction and small pole-sized trees and some shrubs. Benton site velocities are probably partly due to air movement associated with cold air drainage. Mean monthly wind velocities ranged from 0.41 to 1.12 mph at Headquarters which is an opening in a forest. The Lake site is free of tree influences and of wind obstructions such as shrubs when the wind is from the southwest, the prevailing direction. Mean monthly wind velocities were the greatest at the Lake site as compared with the other sites and ranged from 0.76 to 1.52 mph. Daily wind velocities fluctuated widely at the Headquarters station and the Lake site, frequently reaching maximum mean daily velocities of over 2 mph and almost 4 mph on several days.(tables 9-40, inclusive). Daily variation in mean wind velocity at the Burn, Timber, and Benton sites ranged from no wind to about 1 mph.

Table 44. Mean monthly wind velocity

Month	Site				
	Burn	Timber	Benton	Head-quarters	Lake
	M.P.H.				
	1952				
July	.20[1]	.02[1]	.21[1]	.95	1.52[2]
August	.26	.02	.24	.90	1.51
September	.21	.01	.14	.67	1.03
October	.12	T	.92	.41	.76
	1953				
April	.			.96	
May	.65[3]	.12[3]		1.12	
June	.48	.09		.91	
July	.63[4]	.20[5]		.77[6]	1.22
August					.86[6]

1/ Dates 16-31, inclusive
2/ Dates 8-31, inclusive
3/ Dates 4-31, inclusive
4/ Dates 1-10, inclusive
5/ Dates 1-14, inclusive
6/ Dates 1-20, inclusive

Soil Moisture

Soil moisture content in the surface layers is about field capacity at the time of disappearance of the snow cover. Net losses of soil moisture between this time and late June or early July are usually small because vegetation growth is in its early stages and because of frequent additions of water by rainfall. Rainfall usually occurs frequently up to late June or early July. With the end of the rain season and with vegetation reaching maximum growth rates, the soil moisture loss rates increase rapidly in July. As moisture losses occur and the soil moisture content approaches the wilting point in late August or early September, the rate of loss declines to a minimum. Ordinarily there are no significant additions to the soil moisture supply until October and November during a fall rain period preceding the winter accumulation of snow.

The moisture content of the 0-12-inch soil layer was consistently the highest at the Timber site as compared with the Burn and Benton sites (table 45). The differences in soil moisture between the Timber, Benton, and Meadow sites were not pronounced, however. Monthly mean soil moisture in surface foot at the Burn site was from 0.26 to 0.69 inch less than at the Timber site. The Lake site is a special case of high moisture contents maintained by ground water and an organic soil capable of moisture contents of over 700 percent, oven-dry weight basis.

Soil moisture contents at the bare (devegetated) plot at the Meadow site were from 0.48 to 1.69 inch higher than at the vegetated (natural) plot supporting a rather dense stand of grasses and other low vegetation.

Daily soil moisture is tabulated in tables 9-40, inclusive, and shown graphically in figures 17-32, inclusive.

Table 45. Mean monthly moisture content in the 0-12-inch soil layer

Month	Site					
	Burn	Timber	Benton	Meadow		
	Tier 2	Tier 2	Tier 1	Vegetated	Bare	Lake
	Inches					
1952						
July	3.06[1]	3.75[1]	3.62[1]	3.27[1]	4.96[1]	8.31[1]
August	1.67	2.30	2.20	2.42[2]	3.87	7.02
September	1.49	2.08	1.80	4.47[2]	3.53	5.97
October	1.46	1.72	1.72	4.44[2]	2.61	5.99
1953						
April				6.13	6.34	
May	4.95[3]	5.21[3]		5.73	6.21	
June	4.96	5.32		5.59	6.49	
July	4.21[2,4]	4.27[2,4]		4.36[2,4]	5.37[4]	8.86[2,4]
August						7.73[4]

1/ Dates 7-31, inclusive
2/ Artificial rainfall applied
3/ Dates 4-31, inclusive
4/ Dates 1-20, inclusive

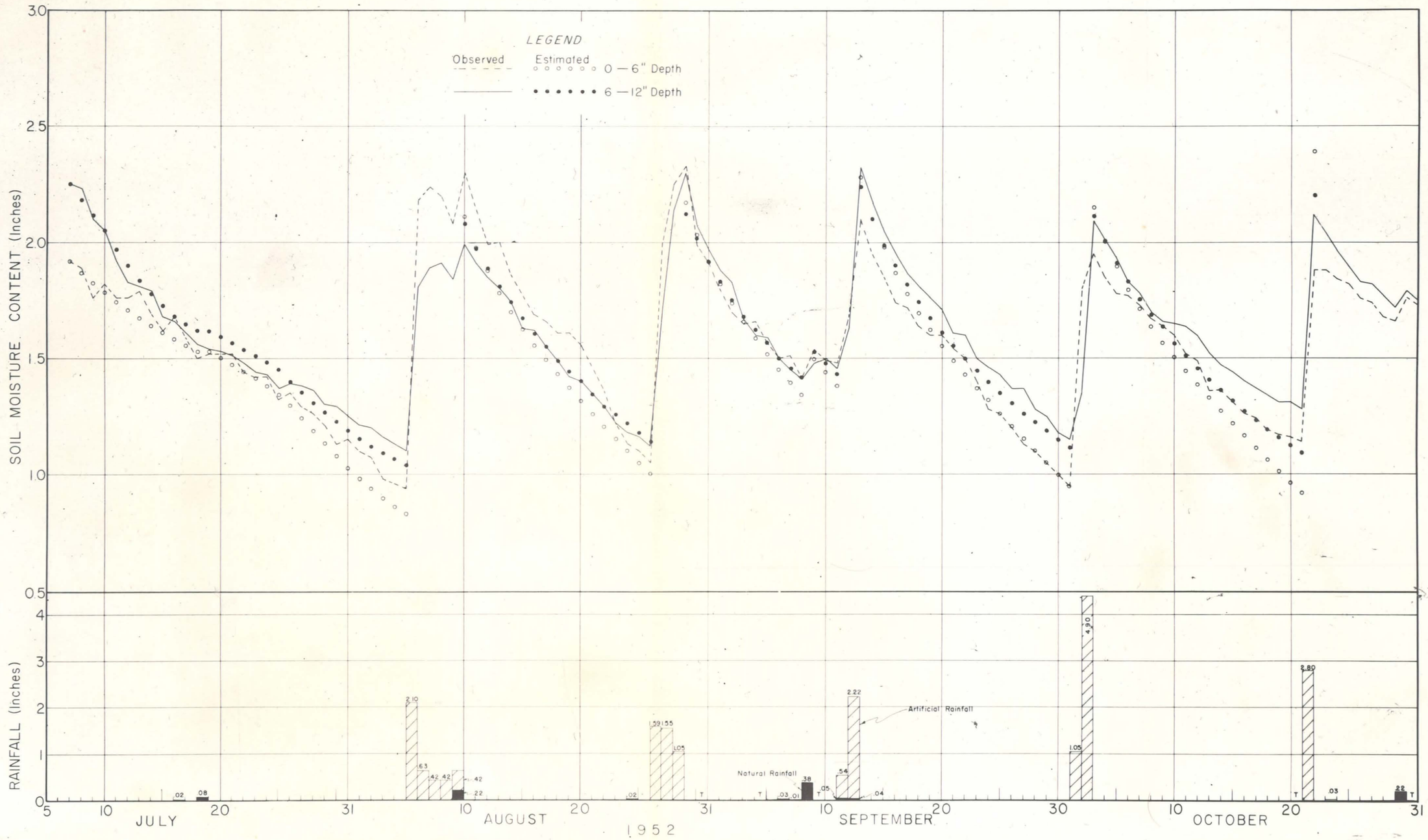

Figure 17. Observed and estimated daily soil moisture and rainfall at the Burn site, tier 1, 1952

Burn T-2 1952

LEGEND

Observed ------ Estimated ° ° ° ° ° 0–6" Depth

——— • • • • • 6–12" Depth

SOIL MOISTURE CONTENT (Inches)

3.0
2.5
2.0
1.5
1.0
0.5

RAINFALL (Inches)

1.0
0.5
0

.02 .06 .22 .02 T T .03 .01 .38 T .05 .04 T .03 .22 T

5 10 20 31 JULY 10 20 31 AUGUST 10 20 30 SEPTEMBER 10 20 31 OCTOBER

1952

Figure 18. Observed and estimated daily soil moisture and rainfall at the Burn site, tier 2, 1952.

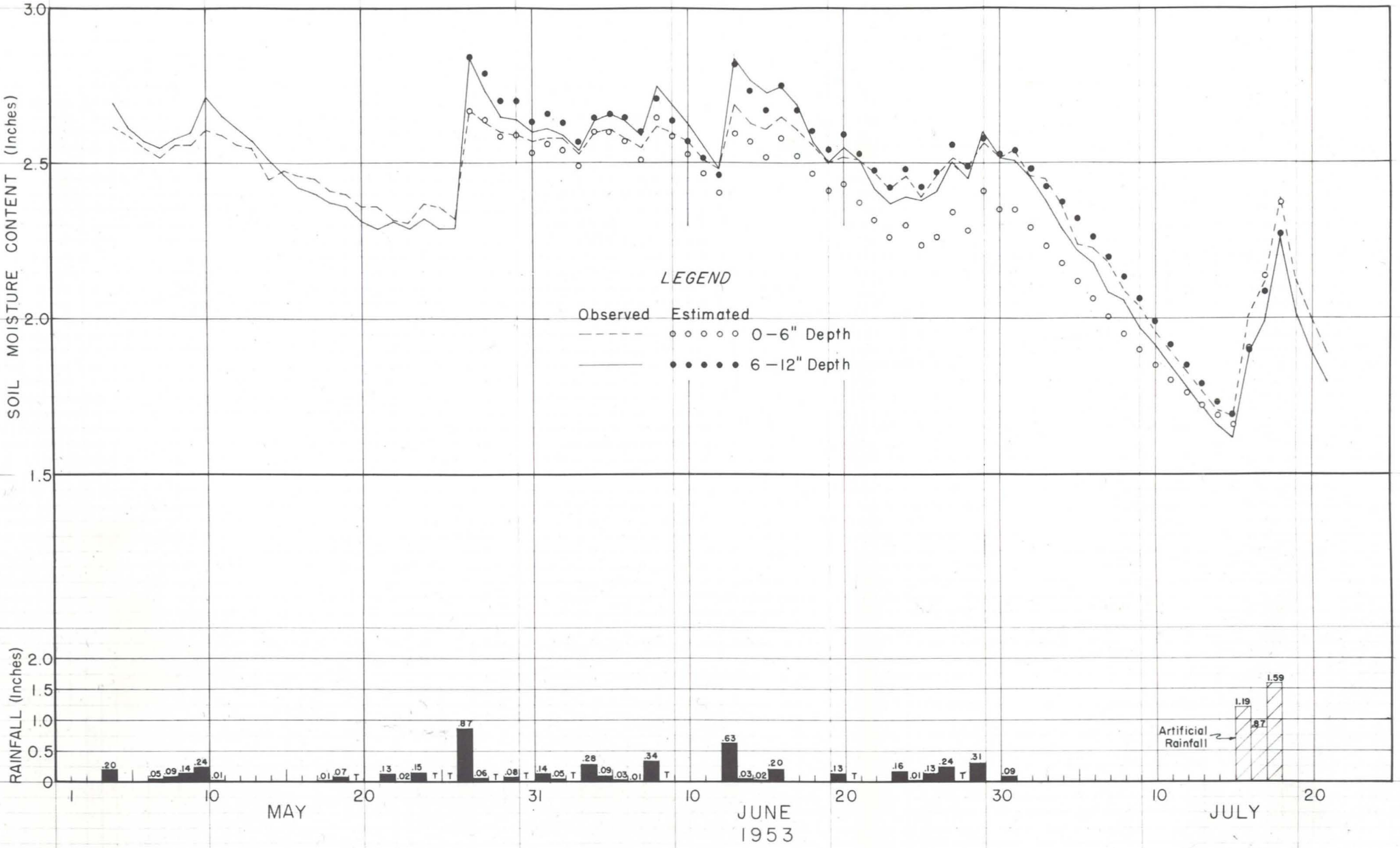

Figure 19. Observed and predicted daily soil moisture and rainfall at the Burn site, tier 1, 1953.

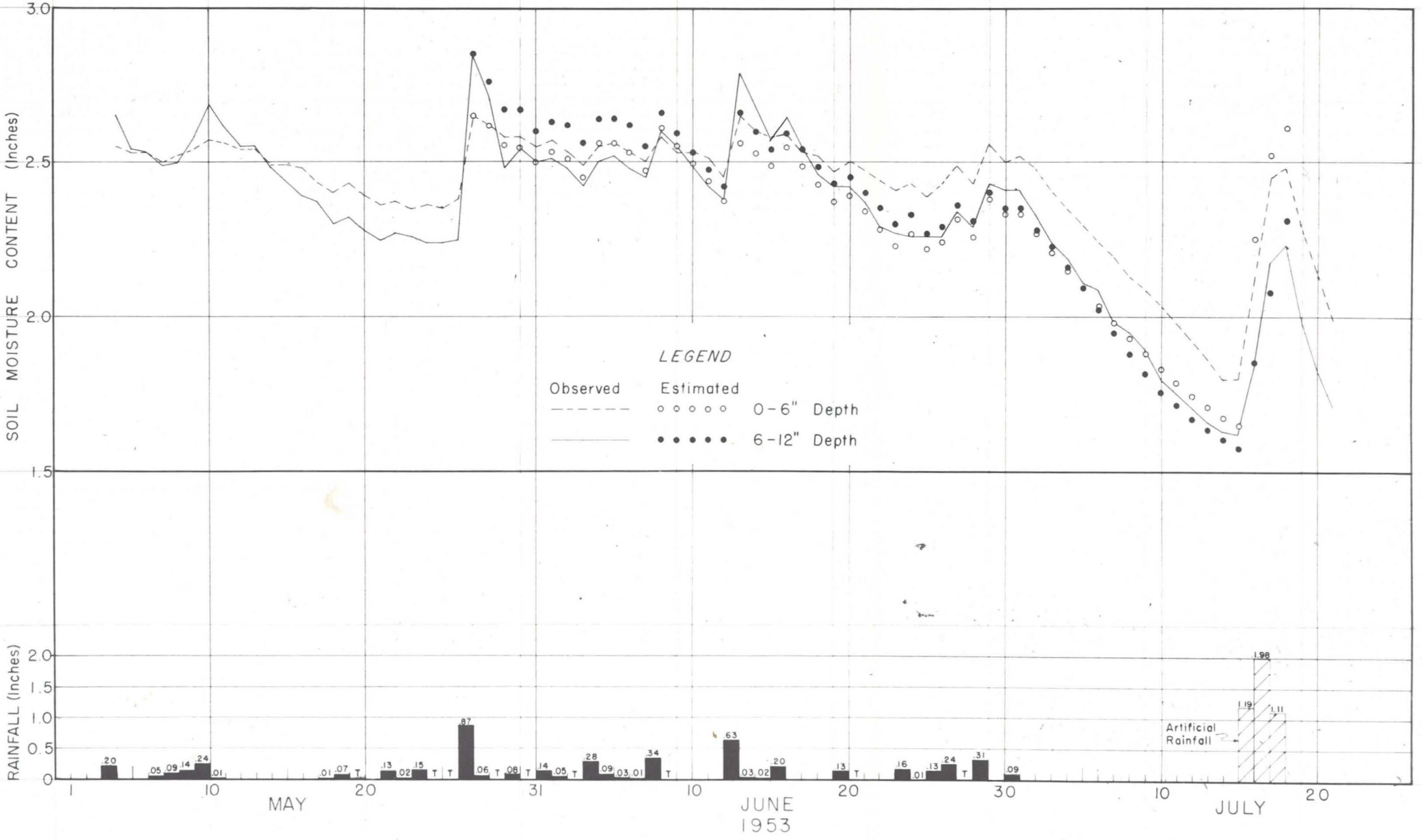

Figure 20. Observed and predicted daily soil moisture and rainfall at the Burn site, tier 2, 1953.

Timber T-1 1952

LEGEND

Observed — Estimated

o o o o o 0-6" Depth

• • • • • 6'-12" Depth

SOIL MOISTURE CONTENT (Inches)

3.0
2.5
2.0
1.5
1.0
0.5

RAINFALL (Inches)

4
3
2
1
0

4.19
.06
.16
Natural Rainfall
5.57
2.80
Artificial Rainfall
.01
.01
.01
.30
T
4.19
.03
.02
2.10
2.10
4.19
.01
.16
T

5 10 20 31 10 20 31 10 20 30 10 20 31

JULY AUGUST SEPTEMBER OCTOBER

1952

Figure 21. Observed and predicted daily soil moisture and rainfall at the Timber site, tier 1, 1952.

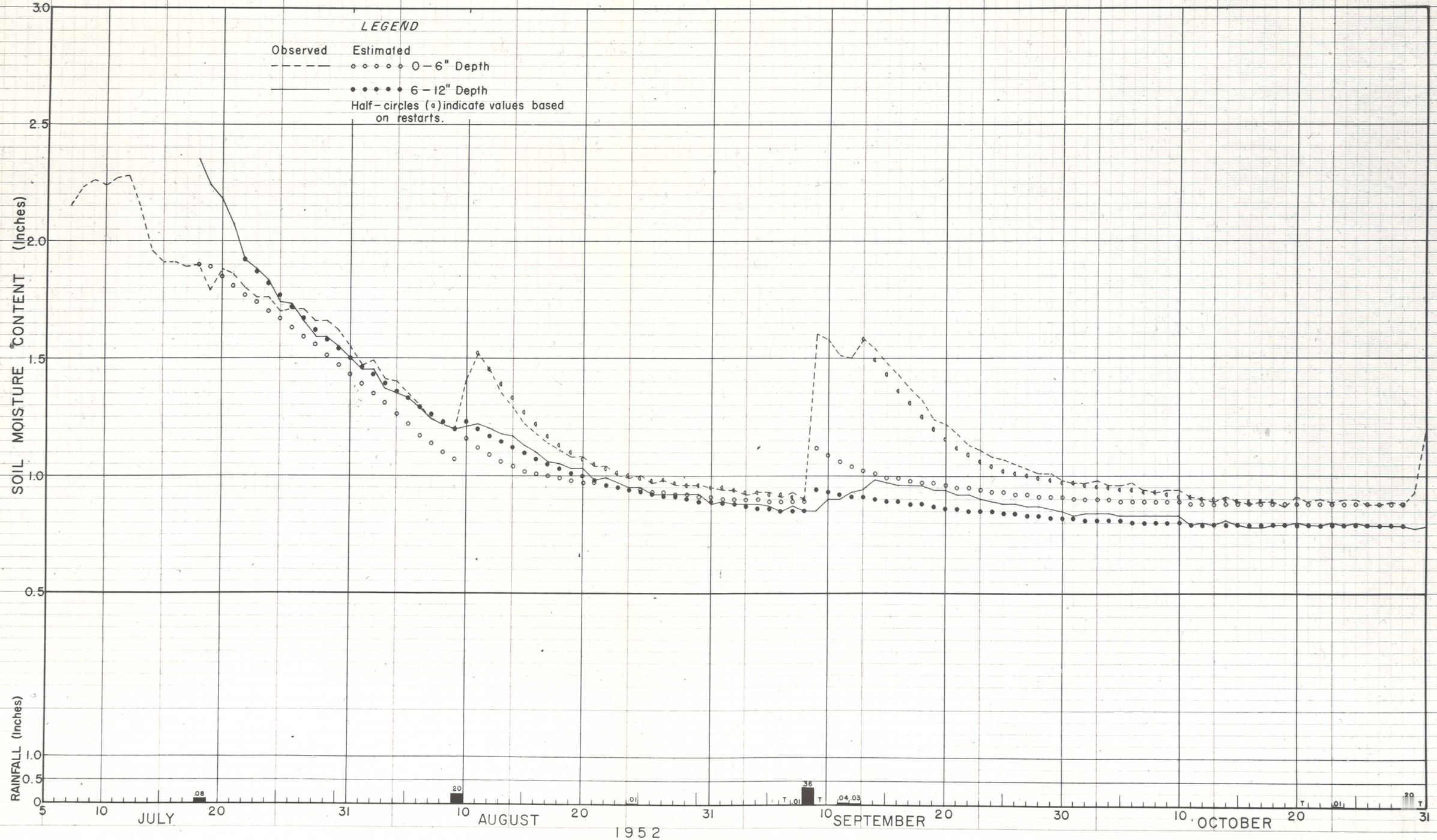

Figure 22, Observed and estimated daily soil moisture and rainfall at the Timber site, tier 2, 1952.

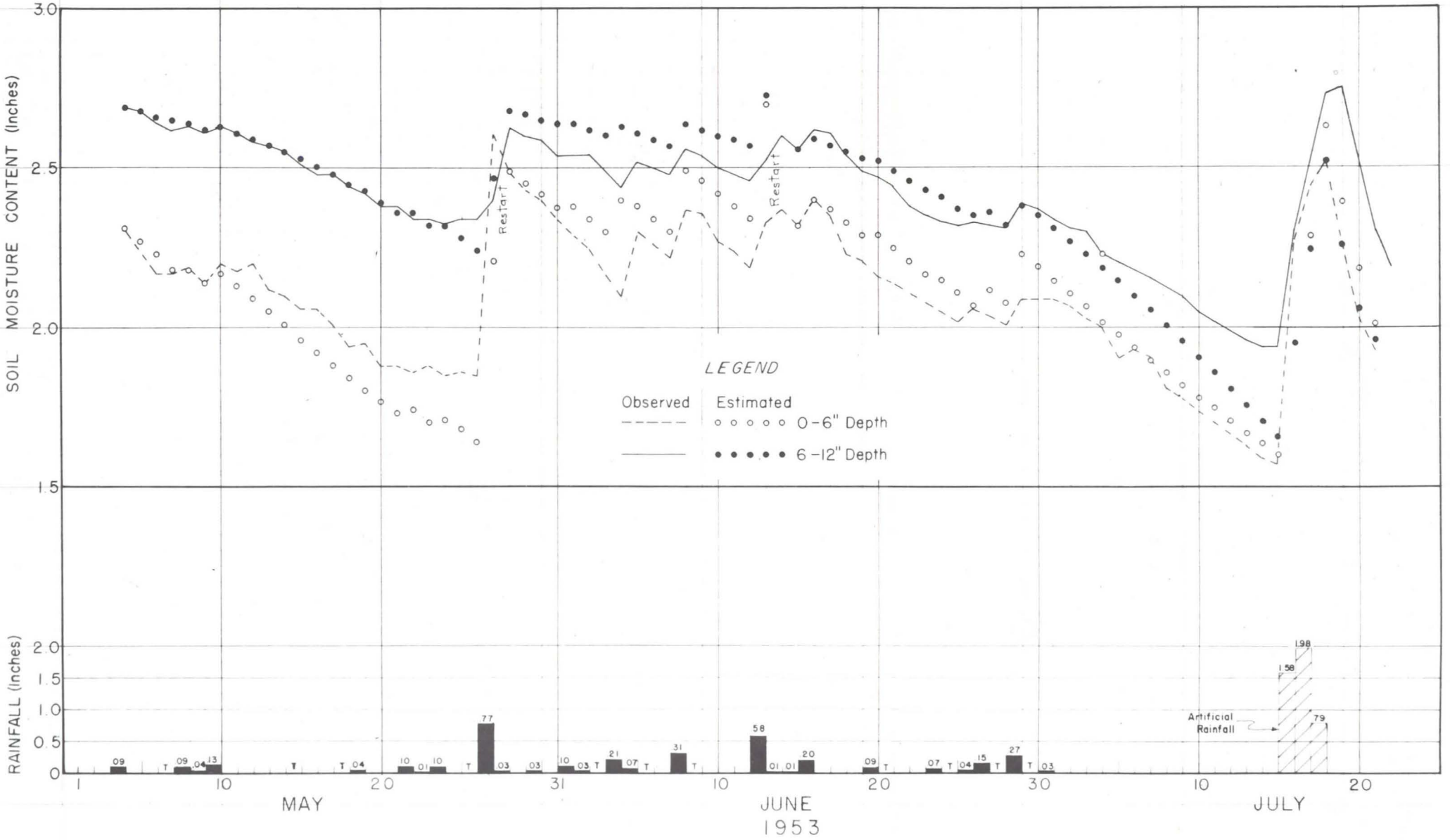

Figure 23. Observed and estimated daily soil moisture and rainfall at the Timber site, tier 1, 1953.

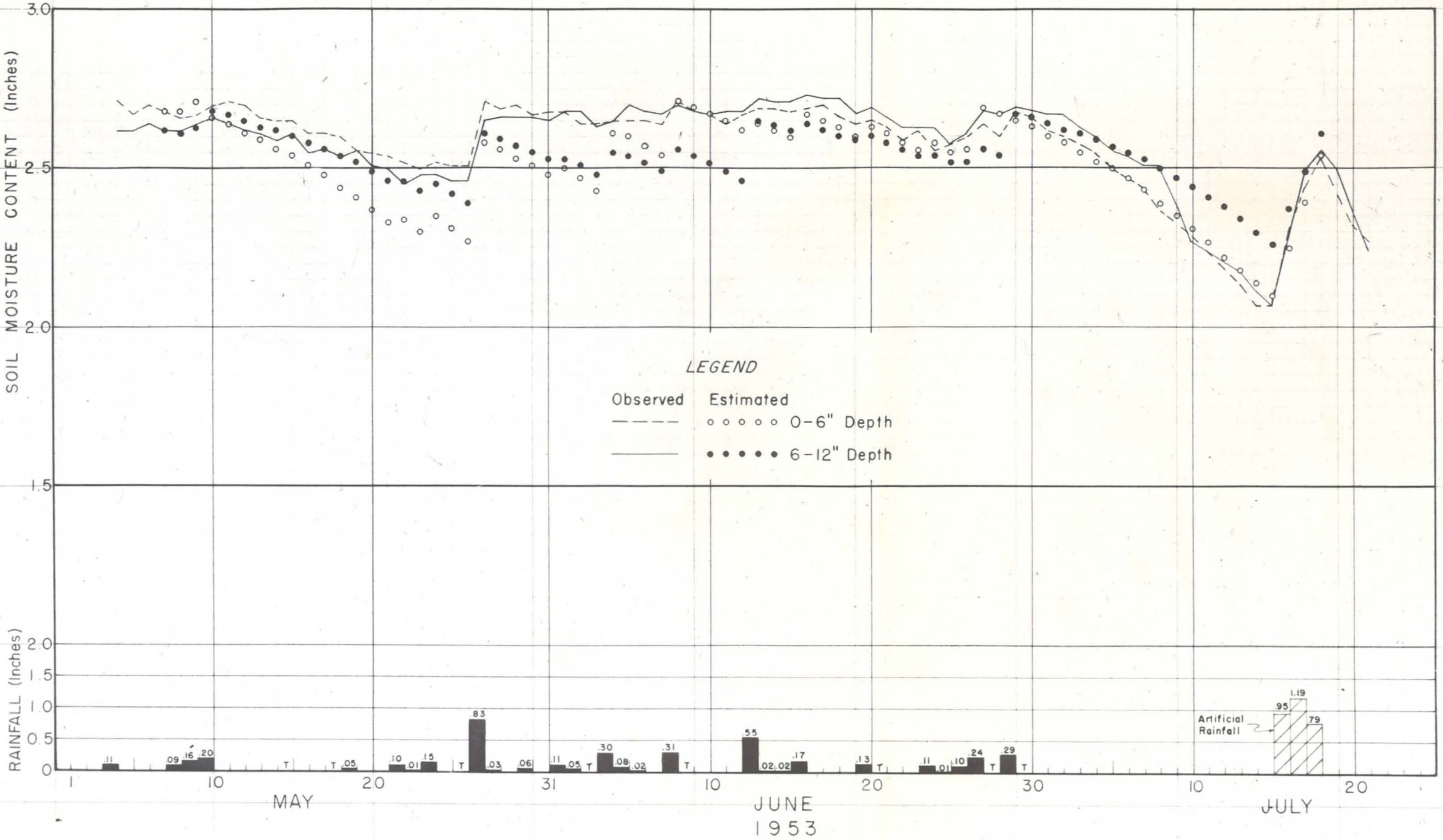

Figure 24. Observed and estimated daily soil moisture and rainfall at the Timber site, tier 2, 1953.

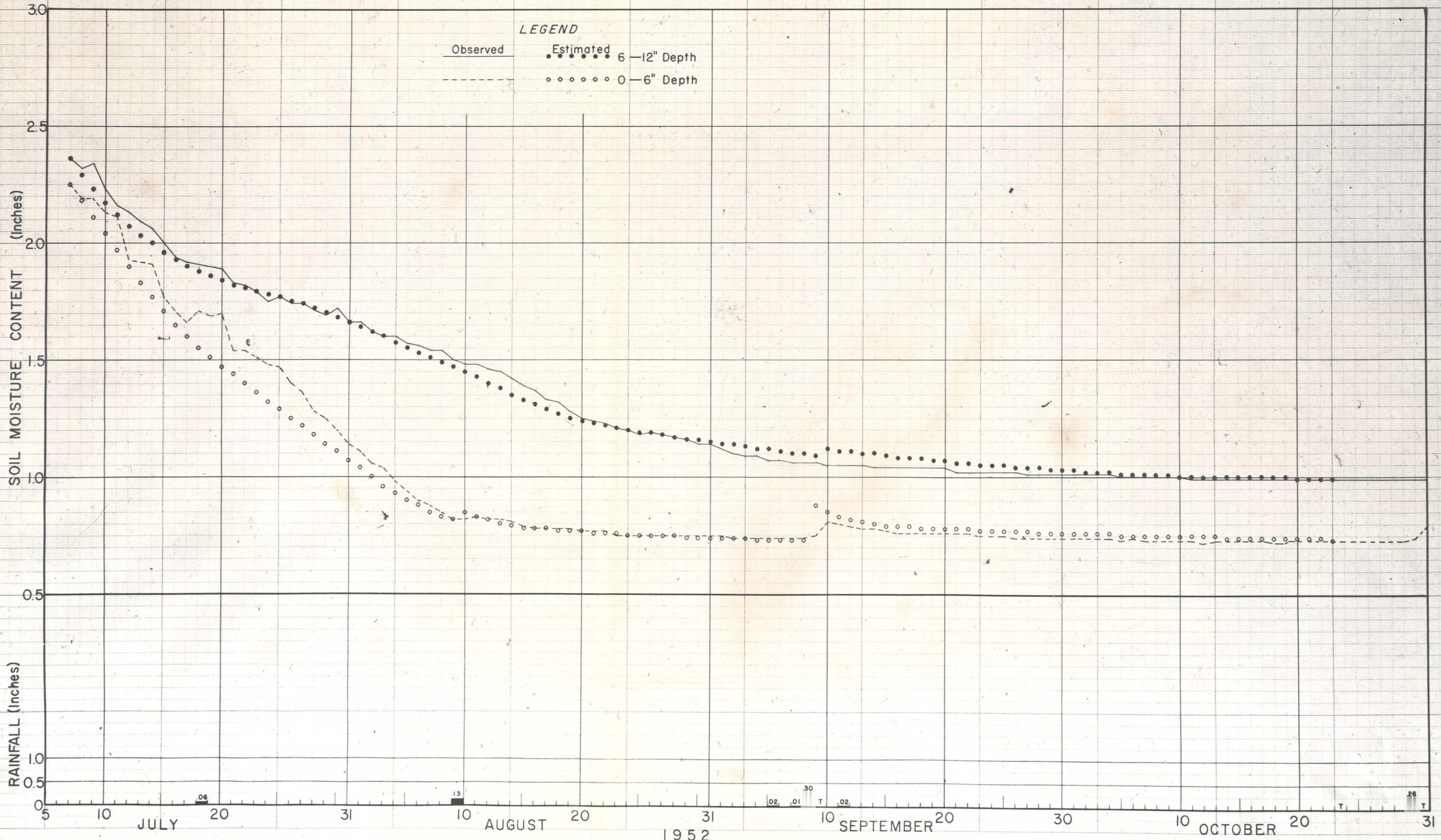

Figure 25. Observed and estimated daily soil moisture and rainfall at the Benton site, tier 1, 1952.

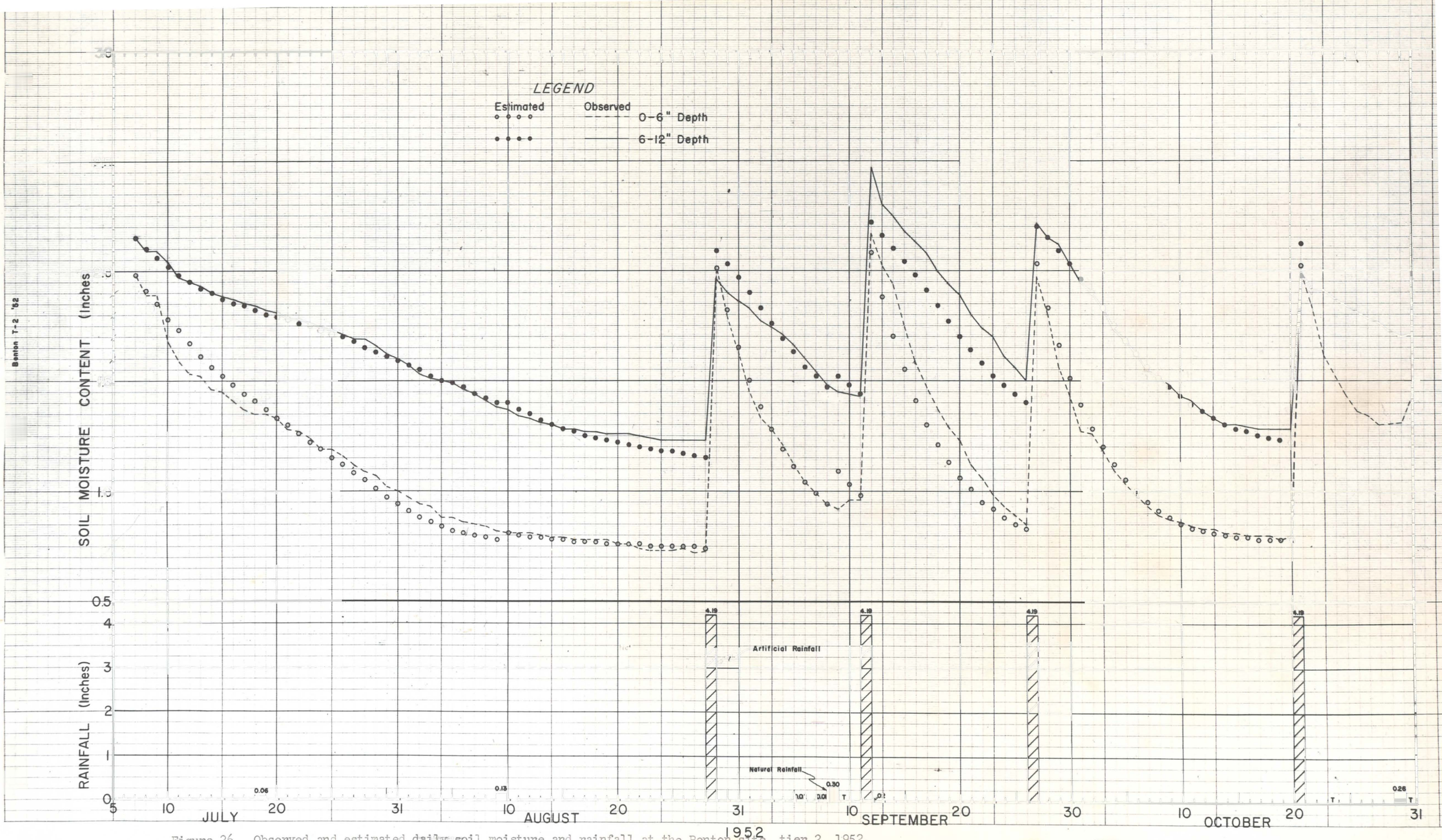

Figure 26. Observed and estimated daily soil moisture and rainfall at the Benton site, tier 2, 1952.

Meadow T-1 1952

SOIL MOISTURE CONTENT (Inches)

3.0
2.5
2.0
1.5
1.0
0.5

LEGEND

Observed — Estimated

ooooo 0-6" Depth

••••• 6-12" Depth

Restart

RAINFALL (Inches)

1.0
0.5
0

.05 .11 .01 T .21 T .02 T .01 .01 T .08 .03 .32 T T .08 T .02 .34 .01

5 10 JULY 20 31 10 AUGUST 20 31 10 SEPTEMBER 20 30 10 OCTOBER 20 31

1952

Figure 27. Observed and estimated daily soil moisture and rainfall at the Meadow site, tier 1 (bare), 1952.

LEGEND

Observed — Estimated

o o o o o 0 – 6" Depth

• • • • • 6 – 12" Depth

SOIL MOISTURE CONTENT (Inches)

RAINFALL (Inches)

Natural Rainfall

Artificial Rainfall

JULY AUGUST SEPTEMBER OCTOBER

1952

Figure 28. Observed and estimated daily soil moisture and rainfall at the Meadow site, tier 2 (natural), 1952.

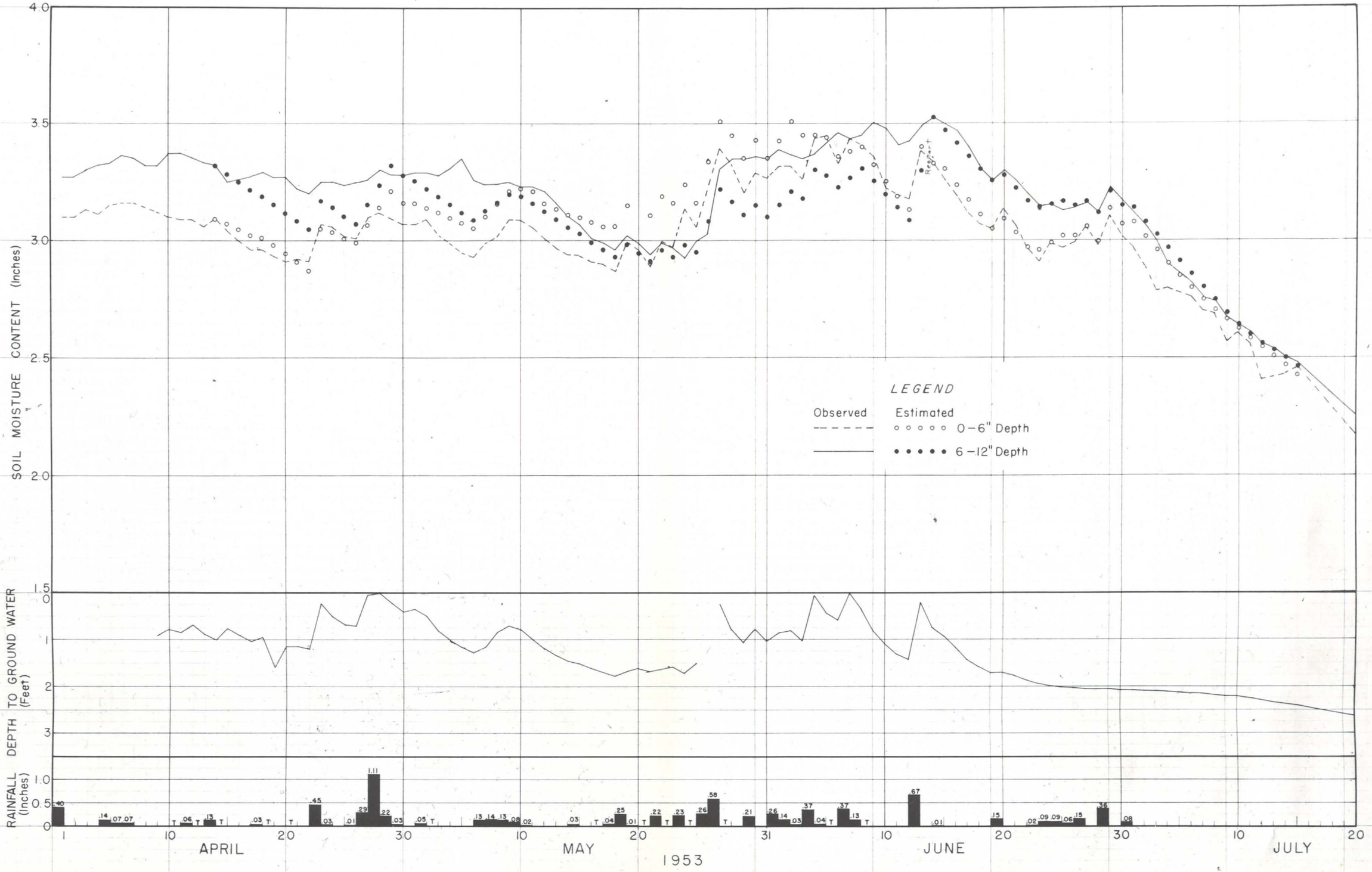

Figure 29. Observed and estimated daily soil moisture and rainfall and ground water level at the Meadow site, tier 1 (bare), 1953.

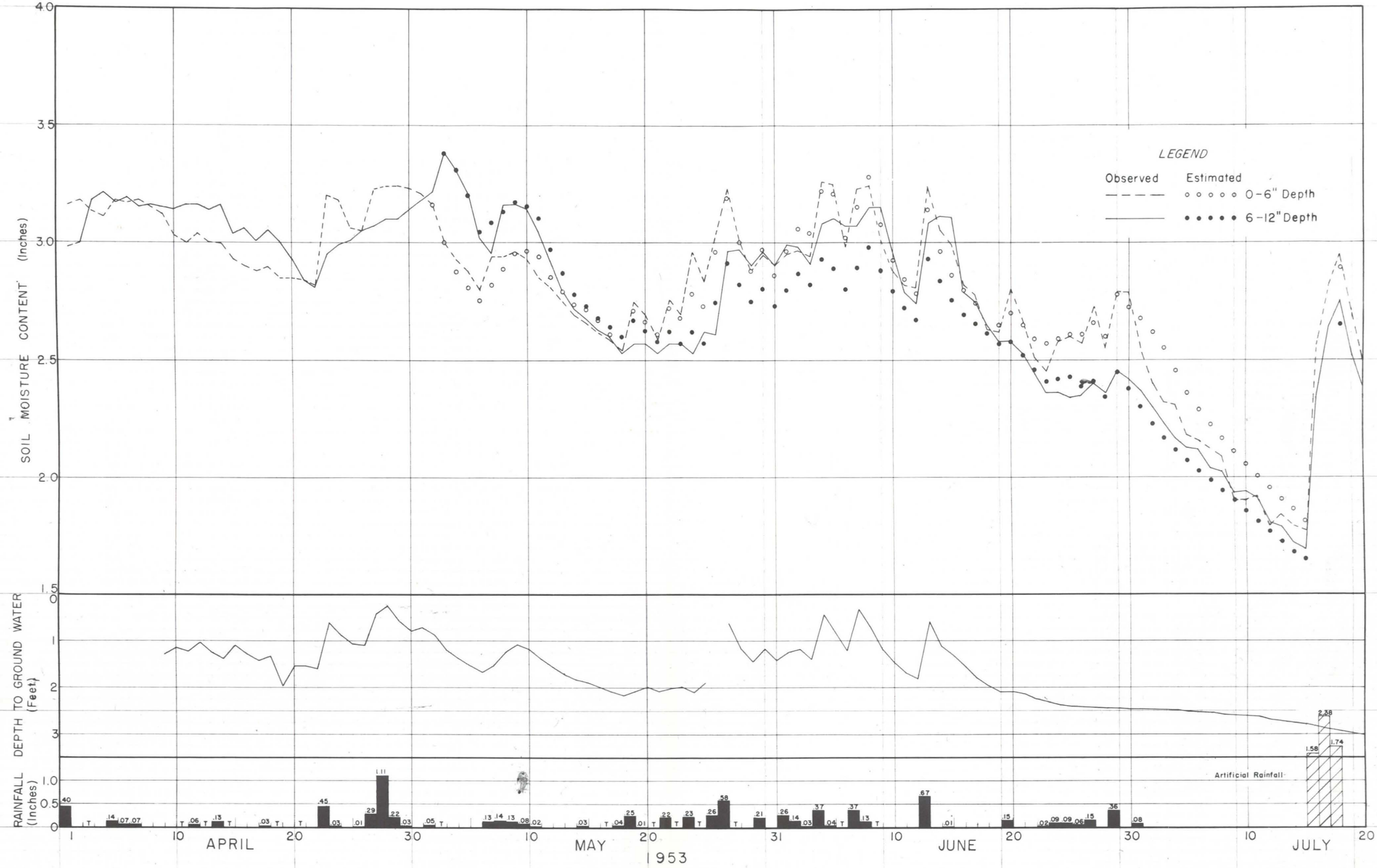

Figure 30. Observed and estimated daily soil moisture and rainfall and ground water level at the Meadow site, tier 2 (natural), 1953.

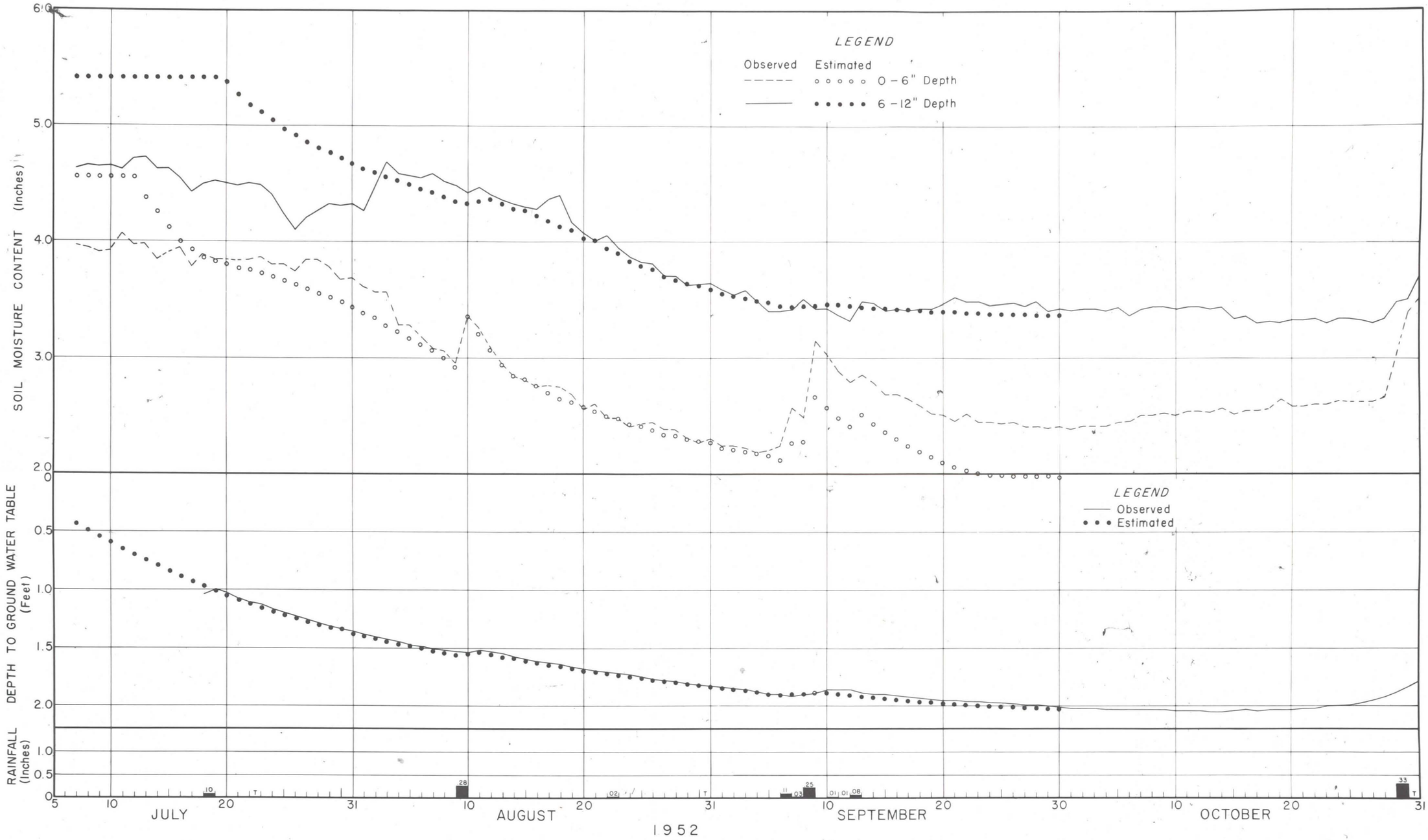

Figure 31. Observed and estimated daily soil moisture and ground water level and rainfall at the Lake site, 1952.

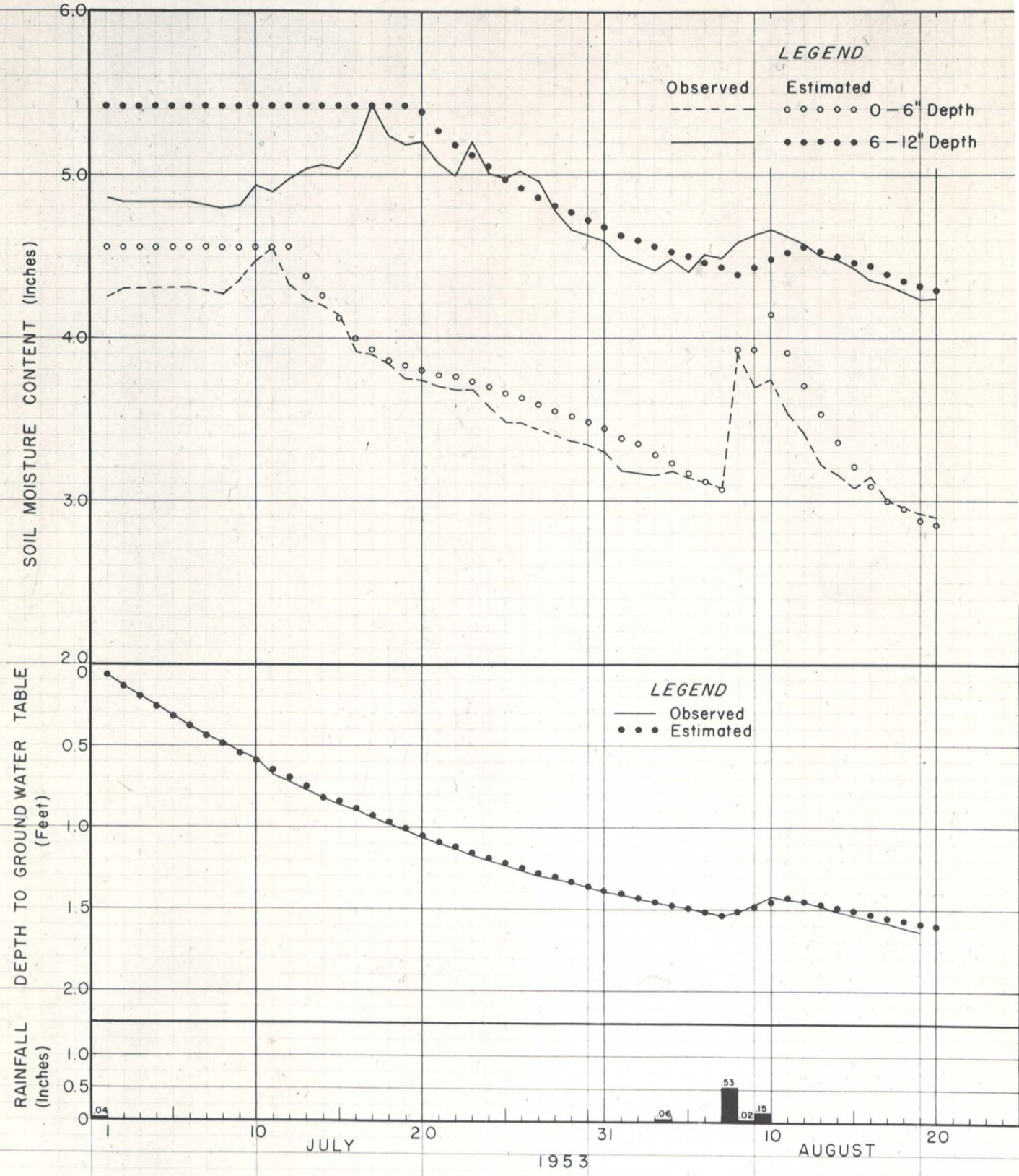

Figure 32. Observed and estimated daily soil moisture and ground water level and rainfall at the Lake site, 1953.

Soil Temperature

Mean monthly soil temperatures summarized in table 46 for the 10½-inch depth were lowest at the most uniformly and completely shaded site (Benton) and highest at the open site with no forest influence (Lake). The other sites with intermediate conditions of shade and wind influence were also intermediate with respect to soil temperatures. Soil temperatures observed at the 1½-, 4½-, 7½-, and 10½-inch depths are tabulated in tables 9-40, inclusive.

Mean monthly soil temperatures at the 10½-inch depth at the study sites ranged from 45.9° F. to 61.4° F. among all the sites in 1952 for the warmer months of July to September, inclusive, (table 46). About the same range of variation is indicated for 1953. Soil temperatures at the 10½-inch depth at the Lake site and the bare plot at the Meadow site were nearly the same. Mean monthly temperatures were about 1° higher at the Lake except in October 1952 when the temperature was 3° higher. Temperatures at the Lake site varied from 60° to 62° F. in July and August to 48° F. in October. Records were not available for June or earlier at the Lake site.

Table 46. Mean monthly soil temperature at the 10½-inch depth

Month	Site					
	Burn Tier 2	Timber Tier 2	Benton Tier 1	Meadow Natural	Meadow Bare	Lake
	Degrees F					
			1952			
July	54.6[1]	48.2[1]	46.4[1]	53.5[1]	60.9[1]	61.4[1]
August	54.3	49.4	47.1	53.5	60.1	60.3
September	50.5	47.5	45.9	49.9	54.0	55.0
October	44.1	43.5	42.6	42.1	44.8	48.0
			1953			
April						
May	44.8[2]	39.6[2]		45.9	46.4	
June	49.3	43.6		50.2	52.1	
July	55.0[3]	49.8[3]		54.1[3]	59.2[3]	60.0
August						61.7[3]

1/ Dates 7-31, inclusive
2/ Dates 4-31, inclusive
3/ Dates 1-20, inclusive

Mean monthly soil temperatures at the 10½-inch depth at the Burn site were within 2° F. of those at the vegetated plot at the Meadow site. Temperatures ranged from 42° to 46° F. in May and October to 54° to 55° F. in July and August. Soil temperatures at the Timber site were 3° to 6° F. lower than at the adjacent Burn site, except in October when the difference was about 1° F. Mean monthly soil temperatures at the Benton site at the 10½-inch depth were about 2° less than at the Timber site. The soil at the Benton site is more completely and uniformly shaded than at the Timber site and in addition the Benton site is subjected to cold air drainage.

The April through October extremes in mean monthly soil temperature at the 10½-inch depth at the Meadow site, where the longest period of record can be pieced together from 1952 and 1953 data, ranged from a low of 36° F. in April to a high of 54° in July and August. As the season progressed through October, the soil temperature dropped to 42° F.

SOIL MOISTURE ACCRETION

Increases in soil moisture content (accretion) are due to rainfall except in the special case of high ground water tables and minor additions such as condensation. The maximum possible soil moisture content within a given soil layer under normal field conditions is equivalent to the field capacity of the layer. Soil moisture in excess of field capacity can be stored temporarily, but such excesses soon pass to the soil layers below. Large soil pores and passageways such as left by rodents and insect burrows and decaying roots pass water to lower soil layers before the upper layers reach field capacity. Other factors influencing accretion include the intensity and duration of rainfall, interception by vegetation and ground surface litter, and the rate at which the soil can absorb rainfall. Infiltration tests and rainfall intensity records as well as visual observation on the ground indicate that probably none of the storms experienced produced surface runoff.

The relationship of rainfall to soil moisture was determined on the basis of space available for soil moisture storage. Available storage was determined from maximum soil moisture contents (table 47) which were the highest observed values, presumably field capacity. Soil moisture content following an accretion was generally measured about one day after the rainfall.

Table 47. Maximum soil moisture content

Tier	Depth	Site				
		Burn	Timber	Benton	Meadow	Lake
		Inches				
1	0-6	2.69	2.92	2.55	3.45	5.80 1/
	6-12	2.84	2.78	2.75	3.53	5.59 1/
	0-12	5.53	5.70	5.30	6.98	11.39 1/
2	0-6	2.65	2.71	2.52	3.30	-
	6-12	2.85	2.74	2.83	3.45	-
	0-12	5.50	5.45	5.35	6.75	-

1/ Mean of tier 1 and tier 2

Rainfall-available storage relationships may be differentiated into accretion classes on the basis of storm size.

Accretion Class	Definition
I	Rainfall amounts which yield accretion amounts equal to or less than the available storage in the surface foot of soil.
II	Rainfall amounts which yield accretion amounts in excess of available storage in the surface foot of soil.

Rainfall measured at the timbered (Timber and Benton) sites was throughfall. Rainfall catch at the other sites represents storm totals because intercepting vegetation was below the gages.

Rainfall-available storage relationships for accretion classes I and II express accretion as a linear function of rainfall and available storage, respectively, (table 48).

Rainfall at the Lake site occurred at times when the depth to the ground water table was between 1.5 and 2.0 feet. The reduced effectiveness of ground water at this depth on soil moisture enabled the development of a rainfall-soil moisture relationship for class I accretion in the 0-6-inch soil layer (table 48). None of the storms at the Lake site resulted in soil moisture accretion approaching available storage in the 0-6-inch layer. Thus a definite rainfall-storage relationship independent of ground water was not discernable in the 6-12-inch soil layer.

Table 48. Relationship of soil moisture accretion to rainfall and available storage

Site	Depth	Accretion Class I: Regression of accretion on rainfall	Accretion Class II: Regression of accretion on available storage
Burn	0 - 6	Y[1] = .543X[2] - .046	Y[1] = .693X[3] - .005
	6 - 12	Y = .406X - .031	Y = .577X
Timber	0 - 6	Y = .844X - .076	Y = .806X - .048
	6 - 12	Y = .350X - .039	Y = .803X - .034
Benton	0 - 6	Y = .697X - .057	Y = .720X - .013
	6 - 12	Y = .266X - .033	Y = .563X
Meadow Natural	0 - 6	Y = .582X - .033	Y = .747X - .034
	6 - 12	Y = .479X - .063	Y = .664X - .193
Meadow Bare	0 - 6	Y = .443X - .022	Y = .470X
	6 - 12	Y = .361X - .038	Y = .657X - .056
Lake	0 - 6	Y = 1.685X - .037	

1/ Y = Estimated accretion (inches)
2/ X = Rainfall (inches)
3/ X = Available storage (inches)

The maximum amount of rainfall (throughfall on timbered sites) which fails to result in a net soil moisture accretion is defined as the X-intercept of the accretion-precipitation regression line, and is thus the storm size for which accretion exactly balances depletion. For storms in excess of this value, accretion is greater than depletion. Conversely, storms amounts less than the intercept value may add moisture to the soil but depletion exceeds the addition of water so the result is a negative accretion or a net depletion. As rainfall amounts become smaller, the negative accretion becomes larger until with no rainfall, the negative accretion theoretically is depletion uninfluenced by increments of soil moisture.

The observed soil moisture history associated with small storms indicates that their effect may vary according to the antecedent moisture content of the intercepting layer, in this case the soil and litter layer above the 1½-inch fiberglas unit. Moisture of a storm of some small size might be entirely withheld by litter and upper soil layers that are considerably below field capacity. The same size storm might contribute an appreciable part of its volume to an apparent reduction of depletion rate or a net accretion when the layers above the upper fiberglas unit are near field capacity due to previous rains and low evapotranspiration rates. The formulae of table 48 average the range of these effects.

The variability of data for accretion class II for the 0-6-inch depth at the bare plot of the Meadow site and the 6-12-inch depth at Burn and Benton sites resulted in a regression with a small Y-intercept. To avoid illogical cases of accretion when there is no available storage, these regressions were calculated to pass through the origin of the coordinates.

Estimates of accretion due to rainfall are made by first determining whether the rainfall-storage relationship is class I or class II. Subtracting soil moisture content from the proper maximum storage value in table 47 indicates available storage. The appropriate equation solved with the rainfall amount shows the amount of accretion for class I conditions. For class II rainfall-storage relationships, the accretion value is derived by solving the appropriate class II equation using the available storage value. Negative accretions indicated by formula for small storms are used only if they do not exceed the depletion rate shown by the depletion curves. In other words, for storm amounts less than the X-intercept value, use the smaller of the following two values: (a) depletion amount indicated by depletion curves and (b) the negative accretion amount indicated by accretion formulae. Rainfall amounts less than .02 or .03 inch are generally ignored.

SOIL MOISTURE DEPLETION

Soil moisture depletion rates for a given soil and depth are defined largely by time and soil moisture content, except as modified by high ground water levels. Time is an integration of factors such as vegetation, evaporation, and drainage of gravitational water.

The similarity of individual depletion periods, such as those shown graphically in figures 17-32, inclusive, was evident when the periods were superimposed one over the other. This revealed consistently high depletion rates following the development of near maximum moisture contents in August and later. Depletion rates following similar moisture levels in the late spring and early summer were much less. Both depletion patterns reached a minimum daily loss rate as moisture contents approached what was probably the wilting point. The differentiation between the two depletion relationships reflects the effectiveness of spring conditions such as lower air temperatures, higher humidities, and vegetation in early stages of development as compared with higher air temperatures, lower humidities, and vegetation in stages of maximum development under summer conditions.

Depletion curves for soil moisture prediction were developed by superimposing and matching the graphs of individual soil moisture depletion periods to produce a family of curves covering the moisture range from near maximum storage to the minimum of record. Smooth curves (figures 33 and 34) averaging the depletions were drawn and reduced to table 49 from which the curves can be replotted to any desired scale.

Spring depletion curves were applicable through July. Summer depletions were used for subsequent periods up to late October.

Spring Depletion

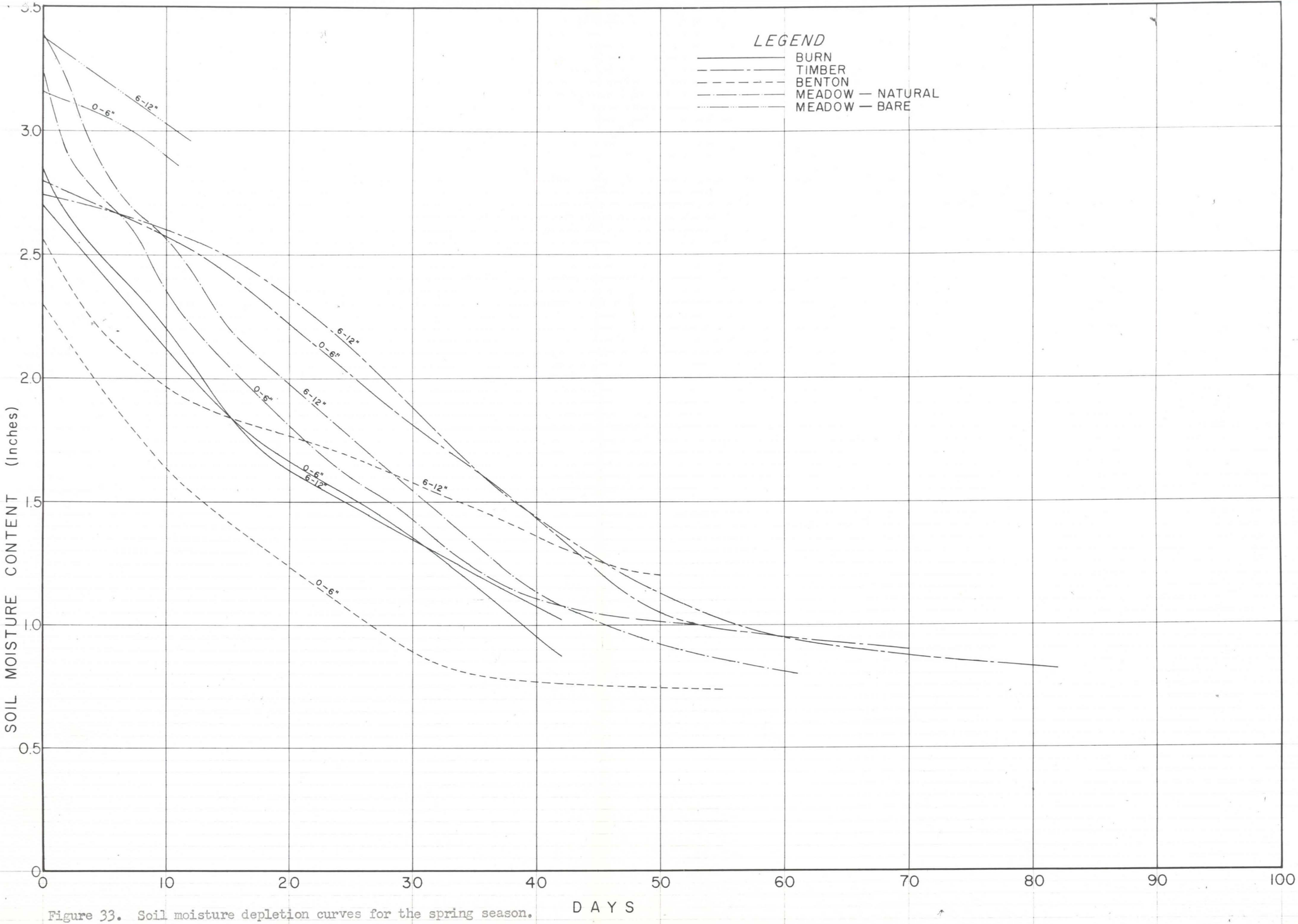

Figure 33. Soil moisture depletion curves for the spring season.

Summer Depletion

SOIL MOISTURE CONTENT (Inches)

DAYS

LEGEND

BURN
TIMBER
BENTON
MEADOW — NATURAL
MEADOW — BARE

0-6"
6-12"

Figure 34. Soil moisture depletion curves for the summer season.

Table 49. Daily soil moisture depletion

Days	Spring depletion										Summer depletion										
	0 - 6-inch depth					6 - 12-inch depth					0 - 6-inch depth						6 - 12-inch depth				
	Burn	Timber	Benton	Meadow Natural	Meadow Bare	Burn	Timber	Benton	Meadow Natural	Meadow Bare	Burn	Timber	Benton	Meadow Natural	Meadow Bare	Lake	Burn	Timber	Benton	Meadow Natural	Meadow Bare
0	2.700	2.796	2.300	3.250	3.160	2.850	2.744	2.568	3.380	3.380	2.690	3.000	2.600	2.950	3.450	4.144	2.850	2.780	2.650	2.750	3.350
1	2.642	2.775	2.228	3.048	3.140	2.741	2.733	2.474	3.302	3.345	2.475	2.724	2.200	2.785	3.366	3.911	2.325	2.415	2.470	2.554	3.495
2	2.584	2.754	2.156	2.900	3.120	2.664	2.722	2.383	3.197	3.310	2.280	2.467	1.978	2.693	3.293	3.705	2.150	2.168	2.336	2.458	3.440
3	2.526	2.733	2.085	2.828	3.100	2.597	2.710	2.305	3.050	3.275	2.108	2.242	1.784	2.619	3.224	3.523	2.030	2.025	2.250	2.380	3.385
4	2.468	2.712	2.016	2.769	3.080	2.532	2.697	2.235	2.932	3.240	1.978	2.064	1.616	2.554	3.160	3.362	1.932	1.932	2.183	2.314	3.330
5	2.410	2.691	1.948	2.718	3.058	2.475	2.684	2.238	2.840	3.205	1.864	1.928	1.474	2.496	3.098	3.214	1.845	1.867	2.128	2.250	3.275
6	2.352	2.669	1.881	2.670	3.034	2.425	2.669	2.178	2.754	3.170	1.775	1.819	1.356	2.444	3.038	3.076	1.770	1.784	2.068	2.196	3.220
7	2.294	2.647	1.815	2.618	3.004	2.376	2.654	2.131	2.696	3.135	1.695	1.720	1.256	2.400	2.980	2.948	1.700	1.686	2.005	2.145	3.165
8	2.236	2.624	1.753	2.540	2.970	2.320	2.638	2.084	2.656	3.100	1.618	1.622	1.171	2.360	2.923	2.830	1.638	1.588	1.940	2.100	3.110
9	2.178	2.601	1.694	2.438	2.936	2.261	2.621	2.044	2.616	3.065	1.550	1.530	1.098	2.322	2.868	2.722	1.578	1.506	1.872	2.061	3.055
10	2.120	2.576	1.637	2.352	2.899	2.200	2.603	2.006	2.562	3.030	1.487	1.459	1.035	2.285	2.815	2.624	1.520	1.431	1.800	2.026	3.000
11	2.062	2.550	1.586	2.278	2.859	2.133	2.584	1.965	2.500	2.995	1.428	1.395	.982	2.252	2.764	2.535	1.465	1.361	1.729	1.995	2.945
12	2.004	2.522	1.541	2.216		2.064	2.565	1.933	2.435	2.960	1.371	1.334	.937	2.219	2.720	2.454	1.416	1.293	1.662	1.970	2.890
13	1.951	2.493	1.501	2.158		1.992	2.543	1.906	2.362		1.315	1.277	.900	2.186	2.678	2.381	1.368	1.229	1.600	1.948	2.835
14	1.900	2.460	1.463	2.104		1.920	2.520	1.884	2.280		1.260	1.225	.870	2.154	2.637	2.315	1.324	1.166	1.546	1.927	2.780
15	1.852	2.423	1.427	2.051		1.853	2.495	1.864	2.210		1.207	1.178	.846	2.123	2.596	2.255	1.280	1.106	1.499	1.906	2.725
16	1.808	2.384	1.388	2.001		1.795	2.465	1.846	2.156		1.154	1.139	.828	2.092	2.556	2.200	1.238	1.056	1.455	1.887	2.670
17	1.766	2.345	1.351	1.952		1.742	2.435	1.829	2.109		1.101	1.104	.815	2.063	2.518	2.150	1.198	1.017	1.416	1.868	2.626
18	1.728	2.304	1.315	1.903		1.695	2.401	1.813	2.065		1.048	1.075	.805	2.036	2.479	2.104	1.162	.984	1.380	1.850	2.584
19	1.695	2.263	1.278	1.854		1.658	2.367	1.798	2.021		.996	1.051	.798	2.009	2.439	2.061	1.130	.958	1.347	1.833	2.550
20	1.665	2.222	1.242	1.805		1.625	2.330	1.783	1.978		.951	1.032	.793	1.985	2.394	2.020	1.110	.939	1.320	1.816	2.520
21	1.635	2.180	1.206	1.760		1.597	2.292	1.768	1.935		.910	1.017	.789		2.348	1.980	1.072	.923	1.298	1.800	2.488
22	1.605	2.139	1.171	1.716		1.569	2.253	1.753	1.892		.874	1.004	.786		2.300		1.048	.905	1.278	1.785	2.450
23	1.575	2.098	1.133	1.672		1.541	2.213	1.738	1.849		.841	.994	.783		2.250		1.026	.890	1.261	1.770	2.410
24	1.545	2.057	1.099	1.632		1.513	2.170	1.722	1.806		.810	.985	.780		2.194		1.006	.876	1.246	1.755	2.370
25	1.515	2.016	1.062	1.594		1.485	2.126	1.705	1.763		.787	.977	.778		2.136		.988	.863	1.233		2.327
26	1.485	1.975	1.025	1.566		1.457	2.080	1.687	1.720		.767	.970	.776		2.076		.971	.851	1.222		2.280
27	1.456	1.934	.989	1.534		1.429	2.033	1.668	1.677		.752	.964	.774		2.016		.955	.841	1.213		2.232
28	1.424	1.892	.956	1.502		1.401	1.985	1.647	1.634		.742	.958	.772		1.960		.942	.833	1.204		2.185
29	1.390	1.852	.925	1.467		1.373	1.935	1.624	1.591		.733	.952	.770		1.914		.930	.827	1.196		2.140
30	1.353	1.813	.896	1.425		1.345	1.885	1.601	1.548		.726	.946	.769		1.873		.920	.823	1.188		2.097
31	1.317	1.775	.870	1.383		1.317	1.834	1.579	1.505		.720	.940	.767		1.840		.910	.819	1.180		2.052
32	1.279	1.738	.848	1.338		1.289	1.784	1.558	1.462		.716	.934	.766		1.808		.900	.815	1.172		2.004
33	1.240	1.702	.829	1.298		1.261	1.734	1.537	1.419		.713	.928	.764		1.782		.890	.812	1.165		1.963
34	1.200	1.666	.814	1.262		1.233	1.685	1.517	1.376		.710	.922	.763		1.756		.880	.809	1.158		1.923
35	1.159	1.630	.802	1.230		1.205	1.638	1.497	1.333		.708	.916	.762		1.732		.870	.806	1.151		1.888
36	1.119	1.594	.794	1.200		1.178	1.592	1.477	1.290		.706	.910	.760		1.710		.860	.803	1.144		1.858
37	1.078	1.556	.787	1.172		1.151	1.550	1.456	1.247		.704	.904	.759		1.690		.852	.801	1.137		1.830
38	1.037	1.516	.782	1.145		1.124	1.510	1.434	1.205		.702	.899	.758		1.670		.844	.799	1.130		1.805
39	.996	1.475	.777	1.122		1.097	1.473	1.412	1.169		.700	.895	.757		1.650		.836	.797	1.124		1.781
40	.951	1.433	.773	1.104		1.072	1.437	1.387	1.136		.698	.892	.756		1.632		.830	.796	1.118		1.760
41	.910	1.391	.770	1.089		1.048	1.403	1.362	1.107		.696	.890	.754		1.610		.824	.796	1.112		1.739
42	.874	1.348	.767	1.076		1.026	1.368	1.336	1.084		.694	.888	.753		1.585		.818	.795	1.106		1.718
43		1.305	.764	1.064			1.333	1.315	1.056		.692	.886	.752		1.558		.813	.795	1.100		1.700
44		1.262	.761	1.054			1.301	1.296	1.034		.690	.885	.751		1.532		.808	.794	1.094		1.684
45		1.219	.759	1.045			1.269	1.278	1.012		.688	.884	.749		1.506		.804	.793	1.089		1.670
46		1.177	.756	1.037			1.239	1.260	.992		.686	.883	.748		1.490		.806	.793	1.084		1.656
47		1.138	.754	1.031			1.209	1.246	.973		.684	.882	.747		1.478		.796	.792	1.079		1.644
48		1.104	.751	1.025			1.182	1.233	.954		.682	.881	.746		1.467		.792	.791	1.074		1.632
49		1.075	.749	1.019			1.155	1.222	.936		.681	.880	.745		1.455		.788	.791	1.069		1.620
50		1.052	.747	1.013			1.129	1.213	.920		.680	.880	.744		1.445		.785	.790	1.064		1.608
51		1.032	.745	1.008			1.104		.905		.679	.880	.743		1.435		.783	.790	1.060		1.596
52		1.015	.742	1.004			1.081		.893		.678	.880	.742		1.425		.782	.790	1.057		1.584
53		1.002	.740	1.000			1.060		.880		.677	.880	.740		1.417		.781	.790	1.053		1.574
54		.990	.739				1.039		.870		.676	.880	.739		1.410		.780	.790	1.049		1.566
55		.981	.738				1.020		.860		.675	.880	.738		1.403		.780	.790	1.045		1.558
56		.974					1.001		.850		.674		.737		1.397		.780	.790	1.041		1.550
57		.968					.983		.838		.673		.736		1.391		.780	.790	1.037		1.543
58		.962					.969		.824		.672		.735		1.385		.780		1.034		1.536
59		.956					.956		.810		.671		.734		1.382		.780		1.031		1.529
60		.950					.945		.794		.670		.733		1.380		.780		1.028		1.522
61		.944					.935		.776		.670		.732		1.380		.780		1.025		1.515
62		.938					.926				.670		.731		1.380		.780		1.022		1.509
63		.932					.918				.670		.730		1.380		.780		1.019		1.504
64		.926					.911				.670		.730		1.380		.780		1.016		1.500
65		.920					.904				.670		.730		1.380		.780		1.013		1.500
66		.916					.897				.670		.730		1.380		.780		1.011		1.500
67		.910					.891				.670		.730		1.380		.780		1.009		1.500
68		.904					.885				.670		.730		1.380		.780		1.007		1.500
69		.899					.879				.670		.730		1.380		.780		1.005		1.500
70		.895					.873				.670		.730		1.380		.780		1.003		1.500
71							.867				.670		.730						1.001		
72							.862				.670		.730						.999		
73							.857				.670		.730						.997		
74							.852				.670		.730						.995		
75							.847				.670		.730						.994		
76							.843				.670		.730						.993		
77							.839				.670		.730						.992		
78							.835				.670		.730						.991		
79							.831				.670		.730						.990		
80							.827				.670		.730						.990		
81							.823						.730						.990		
82							.819						.730						.990		
83																			.990		
84																			.990		
85																					

↓ Delete this value and move following values up one day.

The exact dates of transition from spring to summer depletion rates was not determined. It was noted, however, that beginning with some low moisture content, the subsequent depletion rates were similar for both spring and summer curves. The summer depletion curves were used following artificially created high moisture levels for one tier at each site except Lake, in 1952 (figures 17, 21, 26, and 28). It is probable that summer curves would have applied for similar conditions created as early as mid-July.

High soil moisture contents normally do not occur between early July and sometime in September or October due to the lack of rainfall. The one tier, both tiers at the Lake site, at each site that received only natural rainfall probably approximates the normal soil moisture regime.

The spring depletion curves are not necessarily transition curves applicable to a summer-to-winter or a winter-to-summer transition period. The curves were developed from available observed soil moisture contents but were neither generally applicable to the very earliest spring conditions nor were they applicable to depletions occurring in late October or November.

At the Lake site a soil moisture depletion curve, independent of ground water level, was developed for higher moisture contents of the 0-6-inch layer only (figure 35). Ground water levels were the basis for estimating soil moisture content in the 6-12-inch layer.

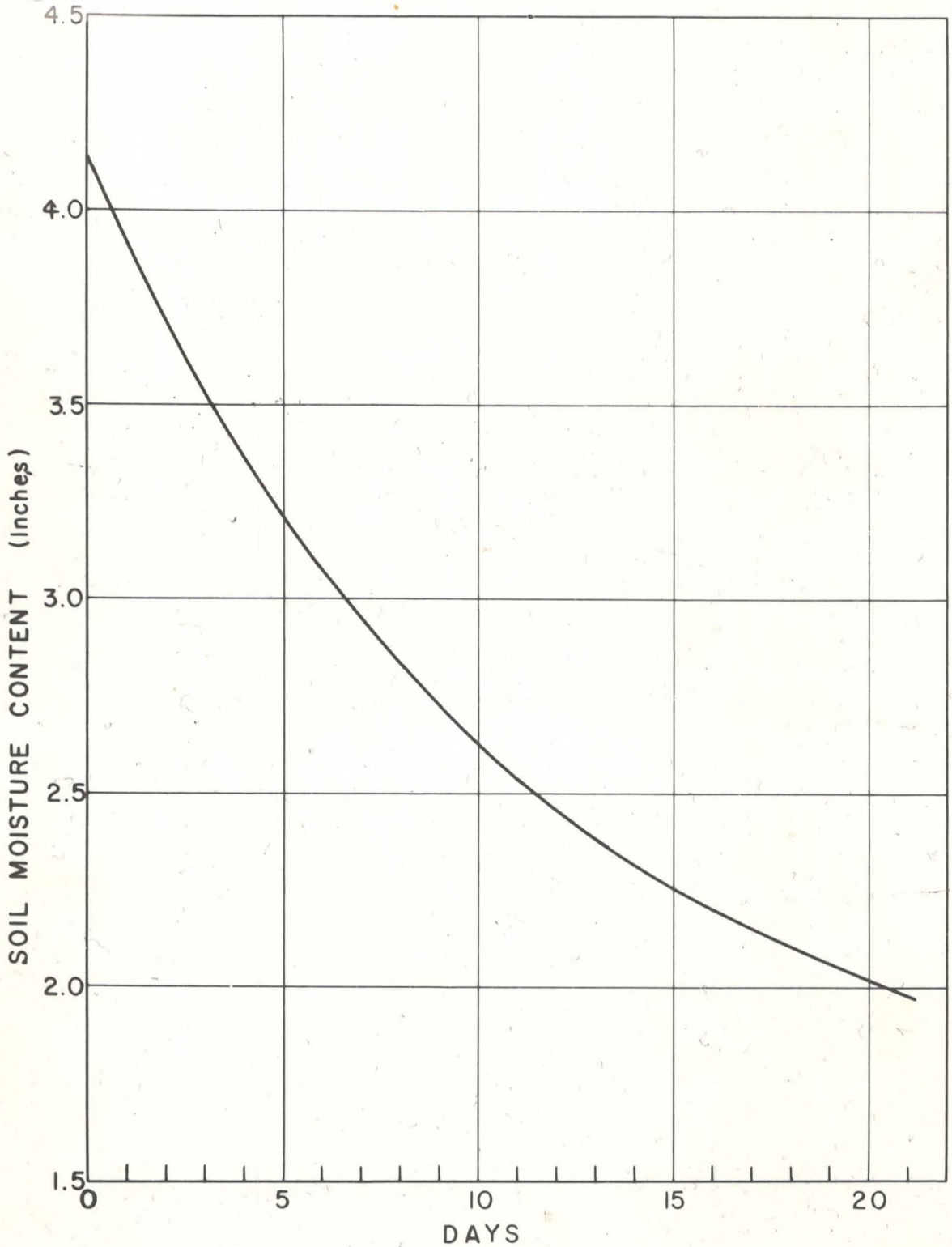

Figure 35. Soil moisture depletion curve for the 0-6-inch layer at the Lake site.

GROUND WATER INFLUENCES

Rain falling on the soil, and water below the soil surface moving upward from the ground water table were both sources of moisture in the surface foot of soil at the Lake and Meadow sites during periods of high ground water tables. The rate of water movement upward from the water table and the distance within which the water table will affect soil moisture have not been determined. The latter factor can be calculated on a theoretical basis for equilibrium conditions when the results of soil moisture tension determinations referred to on page 8 are available.

The ground water table in 1953 at the Meadow site was less than 2 feet from the ground surface until late June (tables 31, 32, and 33 and figures 29 and 30) except for a short period about mid-May when the depth was slightly greater than 2 feet at the vegetated plot. During July the ground water levels fell to about 2½ to 3 feet below the surface (table 34). In the 1952 period of observation, ground water levels were probably 3 feet or more below the surface during all but early July.

Soil moisture accretion at the Meadow site was based entirely on the effect of rainfall. Soil moisture depletion was based on observed rates of loss. That these relationships could be used fairly successfully is probably due to the fact that up to late June ground water increment closely paralleled the occurrence of rain. Thus the accretion and depletion relationships may be largely the expression of ground water-soil moisture relationships.

The effects of ground water on soil moisture at the Meadow site may be reexamined when soil moisture tension data are available.

Blue Lake, the small body of water around which the peat soil of the Lake site developed, is confined in an upland glacial lake depression by a ridge of bedrock, or possibly a dike. Thus there is a minimum level to which the lake can drop due to outflow over the dike or confining bedrock. The ground water is subject to the same confining influence and the water tables observed may at times approximate the static surface. Ground water at the study site probably originates mostly from seepage from the lake.

Free water was standing on the soil surface in the spring (figure 6). The ground water table receded simultaneously with the development of vegetation to a stage of maximum water use. Ground water recession during this period may have been due in part to an excess of water use by vegetation over gains through seepage from the adjacent lake. The lake level also dropped during this period (but at a slower rate than ground water), perhaps due partly to losses to the ground water of the surrounding peat area, partly to diminishing ground water supplies from surrounding mountain slopes, and partly to the diminishing inflow from Blue Creek which is the surface water flow from the watershed above the lake. By early October in 1952 the vegetation had matured and was curing. Both ground water and lake level remained at a rather stable minimum until about mid-October. Beginning about this time, ground water rose slowly at first until late October and then rapidly to a maximum elevation by mid-November. The lake level also rose in the same general pattern as ground water but at a slower rate. These rapid increases in stage seemed to be associated with lack of transpirational draft on ground water.

The high ground water levels which occurred when water use by vegetation was least probably approached the level of the static surface as defined by the confining bedrock or dike at the outlet of the valley. At such levels the moisture content of the soil above the ground water table is very likely an equilibrium condition in terms of soil moisture tension and height above ground water. Even at the lowest ground water levels observed, when consumptive use was greatest, it is quite likely that a similar equilibrium is attained in the 6-12-inch soil layer. The moisture content of the 0-6-inch layer may fall below an equilibrium amount during periods of high evapo-transpiration rates. The conditions would be upset temporarily after each rainfall. These hypotheses can be verified when soil moisture-tension data are available.

A comparison of ground water levels for 1952 and 1953 shows that they were almost exactly the same on a given calendar day for both years (tables 35, 36, 37, 39, and 40, inclusive, and figures 31 and 32). Thus calendar date is the most readily available, but certainly a strictly local basis for estimating ground water level at the Lake site. It must be assumed that inflow characteristics and consumptive use do not differ markedly from 1952 and 1953 conditions.

The average ground water level recession was determined for the period July 1 to September 30 (table 50). The calendar date basis is an integration of all the factors which affect ground water.

Table 50. Average ground water level, exclusive of increments due to rainfall, at the Lake site beginning July 1

Date	Depth to ground water table		
	July	August	September
	Feet		
1	.07	1.40	1.89
2	.13	1.43	1.90
3	.20	1.45	1.91
4	.26	1.47	1.92
5	.31	1.49	1.93
6	.37	1.51	1.94
7	.43	1.53	1.95
8	.49	1.55	1.96
9	.54	1.56	1.97
10	.59	1.58	1.98
11	.64	1.60	1.98
12	.69	1.62	1.99
13	.74	1.64	1.99
14	.79	1.65	2.00
15	.84	1.67	2.00
16	.88	1.69	2.01
17	.93	1.70	2.02
18	.97	1.71	2.02
19	1.01	1.73	2.02
20	1.05	1.74	2.03
21	1.09	1.76	2.03
22	1.12	1.77	2.03
23	1.15	1.78	2.04
24	1.19	1.79	2.04
25	1.22	1.81	2.04
26	1.25	1.82	2.04
27	1.28	1.83	2.04
28	1.30	1.84	2.05
29	1.33	1.86	2.05
30	1.35	1.87	2.05
31	1.38	1.88	-

Influent seepage of rainfall in excess of 0.15 inch resulted in ground water increments as shown in table 51. One day of lag time is allowed between the day of the rainfall (or last day of rainfall where storms occurred on several successive days) and the day of the resultant ground water increment.

The relationship of depth to ground water table to soil moisture is shown in table 52 for the 0-6-inch peat layer and in table 53 for the 6-12-inch layer.

Table 51. Ground water table increment due to rainfall

Rain-fall	Ground water table increment by hundredths of inches of rainfall									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
Inches	Feet 1/									
0.1	.000	.000	.000	.000	.000	.000	.001	.002	.003	.004
0.2	.005	.006	.007	.008	.010	.012	.013	.015	.018	.020
0.3	.022	.024	.026	.029	.031	.033	.035	.037	.040	.042
0.4	.044	.046	.048	.051	.052	.055	.057	.059	.062	.064
0.5	.066	.068	.070	.073	.075	.077	.079	.081	.084	.086
0.6	.088	.090	.092	.095	.097	.099	.101	.103	.106	.108
.07	.110	.112	.114	.117	-	-	-	-	-	-

1/ One day lag time between day of rainfall and day of peak ground water level.

Table 52. Relationship of moisture content of the 0-6-inch peat depth at the Lake site to depth to ground water table on the previous day

Antecedent depth to ground water table	Soil moisture content by antecedent depths (hundredths of foot) to ground water table									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
Feet	Inches									
.0	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
.1	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
.2	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
.3	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
.4	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
.5	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
.6	4.56	4.56	4.56	4.56	4.56	4.56	4.54	4.50	4.46	4.43
.7	4.38	4.38	4.32	4.28	4.26	4.23	4.20	4.17	4.14	4.12
.8	4.09	4.07	4.04	4.02	4.00	3.98	3.96	3.94	3.93	3.91
.9	3.89	3.88	3.87	3.86	3.85	3.84	3.83	3.83	3.82	3.82
1.0	3.82	3.81	3.80	3.79	3.78	3.78	3.77	3.77	3.76	3.76
1.1	3.75	3.74	3.73	3.72	3.71	3.70	3.69	3.68	3.67	3.66
1.2	3.65	3.64	3.63	3.62	3.60	3.59	3.58	3.56	3.55	3.53
1.3	3.52	3.51	3.49	3.48	3.46	3.44	3.43	3.41	3.39	3.37
1.4	3.35	3.33	3.31	3.28	3.25	3.23	3.20	3.17	3.15	3.12
1.5	3.09	3.07	3.03	3.00	2.98	2.95	2.92	2.88	2.85	2.82
1.6	2.79	2.76	2.73	2.70	2.68	2.65	2.62	2.60	2.58	2.55
1.7	2.52	2.50	2.48	2.45	2.43	2.41	2.38	2.36	2.34	2.32
1.8	2.30	2.28	2.26	2.24	2.23	2.21	2.19	2.18	2.16	2.14
1.9	2.13	2.11	2.09	2.08	2.06	2.04	2.03	2.02	2.01	2.00
2.0	1.99	1.98	1.98	1.97	1.97	1.96	1.95	1.95	1.94	1.94
2.1	1.93	-	-	-	-	-	-	-	-	-

Table 53. Relationship of moisture content of the 6-12-inch peat depth at the Lake site to depth to ground water table on the previous day

Antecedent depth to ground water table	Soil moisture content by antecedent depths (hundredths of foot) to ground water table									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
Feet	Inches									
.0	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.1	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.2	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.3	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.4	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.5	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.6	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.7	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.8	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
.9	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
1.0	5.42	5.38	5.35	5.33	5.30	5.27	5.25	5.23	5.20	5.18
1.1	5.16	5.13	5.12	5.09	5.07	5.05	5.03	5.01	4.99	4.97
1.2	4.95	4.93	4.92	4.90	4.88	4.86	4.84	4.83	4.81	4.79
1.3	4.77	4.75	4.74	4.72	4.70	4.68	4.67	4.65	4.63	4.62
1.4	4.60	4.59	4.57	4.56	4.54	4.53	4.52	4.50	4.48	4.46
1.5	4.45	4.43	4.41	4.39	4.37	4.35	4.33	4.32	4.29	4.27
1.6	4.25	4.23	4.20	4.18	4.15	4.13	4.10	4.07	4.04	4.00
1.7	3.97	3.94	3.90	3.86	3.82	3.79	3.76	3.73	3.70	3.67
1.8	3.64	3.61	3.09	3.07	3.05	3.03	3.01	2.99	2.97	2.96
1.9	2.95	2.94	2.93	2.92	2.92	2.91	2.91	2.90	2.90	2.89
2.0	2.88	2.88	2.87	2.87	2.86	2.86	2.86	2.85	2.85	2.85

SOIL MOISTURE PREDICTION

Long period predictions of soil moisture were made for each site (figures 17-32, inclusive) using an initial soil moisture content, the daily record of rainfall, and the soil moisture accretion and depletion relationships.

The development of the July 7 to October 21, 1952 prediction for the 6-12-inch depth of tier 2 at the Benton site (figure ~~25~~ 26) is described below as illustrative of the application of soil moisture accretion and depletion relationships. The basic data and material required are:

1. The beginning soil moisture content of 2.15 inches.
2. Graph sheet with a soil moisture scale as the vertical axis and a time (days and months) scale on the horizontal axis.
3. Graph sheet with a soil moisture scale identical to that of (2) above and a time scale (days) beginning with day "zero" on the horizontal axis. Spring and summer depletion curves are plotted on this sheet from table 49.
4. Soil moisture accretion formulae from table 48.

The beginning soil moisture content, 2.15 inches, is plotted on graph (2) above on the date of July 7. The spring depletion curve, plotted on graph sheet of (3) above, is placed under graph (2) so the vertical scales coincide and the curve representing spring depletion intersects the initial soil moisture content of 2.15 inches. No rainfall was observed until July 19 when 0.06 inch was measured. As the rainfall occurred sometime during the observational day July 19, the depletion on graph (2) is traced from graph (3) from July 7 through July 18.

The estimated soil moisture content on July 18 is 1.62 inches. The rainfall amount is class I. Solving the class I accretion formula ($Y = 0.266X - 0.033$) from table 48 indicates a negative accretion of 0.02 inches. This amount subtracted from the soil moisture content on July 18 shows that the soil moisture content on July 19 is 1.60 inches. This value is plotted for July 19. The depletion for this day as indicated by the depletion curve would have been used if the negative accretion indicated by formula had exceeded the depletion shown by the curve.

The depletion curve is realigned, keeping the vertical axes matched, so that the curve intersects the soil moisture content derived for July 19. The period beginning July 19 and ending August 9 is free of rainfall so the depletion curve is traced on graph (2) to the latter date. The class I accretion formula solved for 0.13 inch of rainfall occurring on August 10 shows an accretion of 0.00 inches. A soil moisture content of 1.40 inches was estimated for August 9 so a like amount is plotted for August 10. The summer depletion is aligned so the curve intersects the soil moisture value plotted for August 10 and the curve traced on graph (2) through August 28, ending with an estimated soil moisture content of 1.15 inches. Rainfall, artificially applied, on August 28 was 4.19 inches. The maximum moisture content is 2.83 inches (table 47). Thus the available soil moisture storage of 1.68 inches is less than the rainfall amount and the class II accretion formula (table 48) is used. Solving this formula ($Y = 0.563X$) for the available storage value indicates an accretion

of 0.94 inches which brings the August 29 soil moisture content to 2.09 inches. This value is plotted. Aligning the summer depletion curve with 2.09 inches, the depletion is traced to September 8 ending with an estimated value of 1.47 inches. The 0.02 inches of rainfall on September 6 and 0.01 inch on September 8 are ignored. Note that if the class I accretion formula had been used for these amounts, it would have changed the depletion very little. Class I rainfall of 0.30 inch on September 9 yields an accretion of 0.05 inch which brings estimated soil moisture to 1.52 inches. Soil moistures of 1.48 and 1.44 inches on September 10 and 11 are estimated using the depletion curve. The trace of rainfall on the 10th is ignored.

Available storage on September 11 just prior to the addition of 4.19 inches of artificial rain was 1.39 inches. Solving the class II accretion formula for this amount yields an accretion of 0.78 inches or an estimated soil moisture content of 2.22 inches on September 12. The 0.02 inch of rainfall on the 12th is ignored.

Tracing the summer depletion curve from a beginning value of 2.22 on September 12 shows an estimated soil moisture content of 1.40 inches on September 26 just prior to the addition of 4.19 inches of artificial rainfall. Available storage on this date is therefore 1.43 inches and the class II accretion is 0.80 inch. The estimated soil moisture content on September 27 is therefore 2.20 inches. The depletion curve traced from this date and moisture content indicates an estimated soil moisture content of 1.22 inches on October 20 prior to the addition of 4.19 inches of artificial rain. Available storage on the 20th is estimated as 1.24

inches and the accretion is therefore 0.90 inch. The prediction is terminated at an estimated value of 2.12 inches on October 21. Depletion following this date is not characterized by either of the depletion curves. It is probable that predictions beginning in late October would have to be based on a summer-to-winter transition curve that might resemble the spring curve.

The average deviation of the estimated soil moisture content from the observed in the example described above is 0.04 inch. The greatest deviation occurred on September 12 when the observed value was 2.47 inches and the estimated value was 2.22 inches.

Long period predictions were developed for the Burn, Timber, and Meadow sites in the manner illustrated above.

Soil moisture estimates at the Lake site (figures 31 and 32) were based on estimated ground water levels. Estimated ground water levels were plotted directly from table 50 up to the time of rainfall in excess of 0.15 inch. In 1952, for example, such a rainfall amount first occurred on July 10. On August 9 the estimated depth to ground water was 1.56 feet. A rainfall of 0.28 inch results in an 0.018-foot ground water increment (table 51). This amount subtracted from the level observed on July 9, and allowing the one day lag time, shows the depth to ground water table is 1.54 feet on August 11. Ground water depletion beginning on August 11 and through September 6 is traced from a plotted ground water curve in the manner described above for soil moisture depletion. The ground water depletion curve is plotted from table 50.

The vertical scales are matched and the depletion curve is shifted so that a level of 1.54 feet on the curve intersects the estimated 1.54-foot point. The subsequent depletion is traced to September 6 when the depth to ground water is found to be 1.91 feet. Rainfall on the 7th and 8th combined, 0.14 inch, is near the minimum rainfall yielding a ground water increment. The rain amount is therefore presumed to arrest depletion but cause no increment. Thus on September 8 the ground water level is 1.91 feet. The rainfall of 0.25 inch nets an increment of 0.012 foot and a water level of 1.90 feet on September 10. Subsequent depletion is traced from the ground water curve plotted from table 50.

Soil moisture at the Lake site is estimated on the basis of estimated depth to the ground water table from table 52 for the 0-6-inch layer and table 53 for the 6-12 layer. Accretion due to rainfall in the 0-6-inch layer is estimated from the formula in table 48. For example, solving this formula for the 0.28 inch rainfall which occurred on August 10, 1952 (figure 31) shows an accretion of 0.443 inch. The estimated soil moisture on August 9 was 2.92 inches. Therefore the soil moisture content on August 10 following the rainfall was 3.36 inches.

Depletion is traced from a curve similar to figure 35 which is plotted from table 49. Soil moisture estimates based on ground water are also plotted. Depletion is traced from the curve of figure 35 until it reaches a moisture content equal to that estimated on the basis of ground water, e.g. the point where the curve based on figure 35 intersects the moisture content as plotted from table 52 based on ground water. In the present example this occurred on August 14. Subsequent soil moisture is estimated from table 52 until the next accretion due to rainfall. In the case of depletion following the rainy period ending September 13, the figure 35 depletion intersects with soil moisture estimated from ground water on September 22. Ground water level and soil moisture estimates for 1953 were derived in the same manner as for 1952 at the Lake site.

The accuracy of the accretion and depletion prediction relationship can best be determined by comparison of predicted with observed values. The only observed values available for testing the prediction methods developed here are the values from which the methods were developed. Therefore, some agreement is expected. The comparison should nevertheless provide some indication of expected forecast errors. The period of overlap of 1952 and 1953 data strengthens the comparison. Further testing of the accretion and depletion relationships is possible in 1954 if there are opportunities for occasionally measuring soil moisture at the study sites.

An indication of the range of expected forecast errors is shown in table 54. The average deviation of estimated from observed soil moisture content at the Burn site ranged from 0.02 to 0.09 inch for the 0-6-inch layer and 0.02 to 0.06 inch for the 6-12-inch layer for both 1952 and 1953 except for the 0-6-inch layer of tier 2 in 1953 (figures 17-20, inclusive). Here the average deviation was 0.11 inch, due largely to underestimated soil moisture content beginning about mid-June. Deviations could have been reduced, of course, by restarting from an observed soil moisture content about June 20 or July 1. This was not done, however, because satisfactory comparisons between estimated and observed values are usually obtained in depletion periods following high moisture contents.

Table 54. Deviation of estimated from observed soil moisture content

Site	Tier	0-6-inch depth: No. days	0-6-inch depth: Mean deviation (Inches)	0-6-inch depth: Percentage of estimates within range of: 0-.10 inch	.11-.20 inch	> .20 inch	6-12-inch depth: No. days	6-12-inch depth: Mean deviation (Inches)	6-12-inch depth: Percentage of estimates within range of: 0-.10 inch	.11-.20 inch	> .20 inch
						1952					
Burn	1	108	.08	67	28	5	108	.06	86	14	-
Burn	2	105	.02	100	-	-	105	.02	99	1	-
Timber	1	96	.17 (.07) 1/	60 (80)	12 (16)	28 (4)	96	.10	59	33	8
Timber	2	104	.12 (.06)	63 (85)	19 (10)	18 (5)	104	.03	98	2	-
Benton	1	109	.04	89	10	1	109	.03	100	-	-
Benton	2	107	.05	87	12	1	107	.04	83	16	1
Meadow	Bare	38	.03	100	-	-	39	.03	95	5	-
Meadow	Vegetated	99	.04	97	3	-	99	.04	96	4	-
Lake	1 & 2	86	.21	45	10	45	86	.26	56	13	31
						1953					
Burn	1	53	.09	58	40	2	53	.05	98	2	-
Burn	2	53	.11	48	44	8	53	.06	79	19	2
Timber	1	76	(.10)	(66)	(28)	(6)	76	(.06)	(82)	(12)	(6)
Timber	2	73	.08	72	22	6	73	.08	70	28	2
Meadow	Bare	93	.08	64	35	1	93	(.08)	(72)	(17)	(11)
Meadow	Vegetated	77	.07	81	15	4	77	.08	80	13	7
Lake	1 & 2	51	.13	47	29	24	51	.20	49	22	29

1/ Figures in parentheses are based on restarts.

The average deviation of estimated from observed soil moisture at tier 1 of the Timber site in 1952 (figure 21) was 0.17 inch. Several soil moisture anomalies developed in the 0-6-inch layer at the Timber site in 1952. In the present case, figure 21 shows that accretion following artificial rainfall on August 4 and natural rainfall on August 10 was considerably less than would be expected. Using the observed soil moisture content of 1.25 inch on August 10 as a new starting point for the period ending August 27 reduces the mean deviation for the entire prediction to 0.07 inch (table 54). The average deviation for the 6-12-inch layer was 0.10 inch.

Two anomalous soil moisture accretions are shown for the 0-6-inch layer of tier 2 at the Timber site in 1952 (figure 22). The mean deviation of estimated from observed soil moisture for this layer was 0.12 inch with no restarts of the basis for estimating soil moisture. The deviation was reduced to 0.06 inch when observed soil moisture content on August 11 and September 13 were used as new bases for estimating depletion. Deviations for the 6-12-inch layer averaged 0.03 inch.

The abnormally small amount of accretion at tier 1 is associated with the artificial rainfall applied on August 4. However, the situation failed to develop again with later applications of artificial rainfall. Both abnormally large accretions at tier 2 followed natural rainfall. Rainfall on October 30 produced a similar effect. An examination of the microtopography of the site failed to reveal any surface condition that would concentrate small amounts of rainfall to the degree indicated by the measurements of soil moisture content. An underground opening such as left by a large decayed root or a rodent burrow might account for the apparent excess of water except that the condition was not observed at the same site in 1953 (figure 24).

Average deviations of estimated from observed soil moisture contents were 0.10 and 0.06 inch for the 0-6-inch and 6-12-inch layers, respectively, based on two restarts, for tier 1 at the Timber site in 1953 (figure 23). Tier 2 deviations averaged 0.08 inch, without restarts, for both soil layers.

Average deviations at the Benton site (figures 25 and 26) for 1952 ranged from 0.03 to 0.05 inch.

Deviations of estimated from observed soil moisture contents at the bare plot on the Meadow site averaged 0.03 inch for the period September 10 to October 19, inclusive, 1952. Deviations were not computed for the earlier period for which estimated soil moisture is shown in figure 27. Highly irregular fluctuations of daily soil moisture began on July 23 and continued up to September 10. The irregularities are presumably due to the effects of burning, the means by which the plot was devegetated. The initial devegetation occurred on July 8. The next burning was on July 22. The sharp rise in soil moisture shown on July 23 was probably due in part to the reduction of moisture loss by transpiration. Subsequent fluctuations have no obvious cause until the rainfall of August 10. The sharp rise in soil moisture following this rain may be due partly to added moisture and partly to leaching of plant residues which changed the electrical conductance of the soil. The third burning, on August 15, produced no apparent changes in soil moisture. Soil moisture irregularities continued until September 10. Thereafter depletion followed a more uniform course.

The average deviation of estimated from observed soil moisture for the vegetated plot at the Meadow site was 0.04 inch for both soil depths (figure 28, table 54). Average deviations for both the bare and vegetated plots were from 0.07 to 0.08 inch for both the 0-6-inch and 6-12-inch soil depths at the Meadow site in 1953 (figures 29 and 30). On June 14 the base for ~~the~~ estimating soil moisture was changed to the observed value for the bare plot in 1953. The principal shift in the estimating base was for the 6-12-inch soil layer.

The rather large deviations of estimated from observed soil moisture content at the Lake site (table 64 and figures 31 and 32) were due mainly to the failure of the depletion curve to duplicate observed soil moisture during the higher ground water stages. An additional deviation developed for the 0-6-inch layer in September 1952 (figure 31). Early July deviations may be due to the characteristics of the soil moisture instruments at very high soil moisture contents. For example, in 1953 the moisture content of the 6-12-inch layer must have been a saturation value, yet the instrument indicated a considerably lower value. The obscure cause and effect relationships in this instance may be related to the sharp rise in soil moisture just prior to the depletion accompanying the falling ground water table in 1953. This anomaly was not marked in 1952, however.

The average deviation of estimated from observed ground water at the Lake site was 0.02 feet or less with a majority of daily differences within 0.01 foot (table 55).

Table 55. Deviation of estimated from observed ground water level at the Lake site

No. days	Mean deviation: Feet	Percentage of estimates within range of: .00	.01	.02	.03	.04	.05	.05
				1952				
75	.02	9	34	24	20	11	1	1
				1953				
50	.01	26	48	6	12	6	2	-

SUMMARY

Field and analytical soil moisture prediction procedures developed by the Forest Service for the Waterways Experiment Station, U. S. Army Corps of Engineers at Vicksburg, Mississippi were studied near the Priest River Experimental Forest in northern Idaho on five soil and cover and conditions as follows: "Timber" site - Mission silt loam with cover of old growth near-climax species; "Burn" site - Mission silt loam with planted ponderosa pine and regrowth of natural reproduction on 1935 prescribed burn; "Benton" site - unnamed soil resembling Chamokane loam with cover of 90-year-old pine and larch and associated species; "Meadow" site - Peone silt loam under meadow vegetation, mostly grasses; "Lake" site - Mukilteo peat with a cover of grasslike plants.

Soil moisture accretion and depletion relationships at each site except Lake were developed from daily records of soil moisture and rainfall. Separate spring and summer depletion relationships were found, reflecting the effectiveness of the two seasons in terms of soil moisture losses. Soil moisture accretion and depletion relationships at the Lake site were based partly on ground water levels. Air temperature, relative humidity, and wind velocity measured at all sites indicated that the seasons of observation were nearly "normal." Principal deviation from "normal" was the dry fall season of 1952.

Soil moisture accretion and depletion relationships were used to estimate soil moisture for the period of record. Satisfactory agreement was obtained between estimated and observed soil moisture except for instances of anomalous observed conditions.

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